PRESIDENT OF THE INSTITUTE, CHAIRMAN AND OTHER MEMBERS OF THE COUNCIL AS ON MARCH 31, 2018

President: Dr. Vijay Kelkar, Padma Vibhushan

1. Chairman: Prof. Goverdhan Mehta, FNA, FRS, Dr. Kallam Anji Reddy Chair School of Chemistry, University of Hyderabad, Central University, Gachibowli, Hyderabad - 500 046, Telangana.
2. Director: Prof. Sanghamitra Bandyopadhyay.

Representatives of the Government of India
3. Shri Surendra Nath Tripathi, Additional Secretary and Financial Advisor, Govt. of India, Ministry of Statistics and Programme Implementation, New Delhi.
4. Shri M.V.S. Ranganadham, DG (ES), Govt. of India, Ministry of Statistics and Programme Implementation, New Delhi.
5. Shri Pramod Kumar Das, Additional Secretary, Govt. of India, Ministry of Finance, Department of Expenditure, New Delhi.
6. Dr. Praveer Asthana, Adviser/Scientist-G, Head (AI and Mega Science Divisions), Govt. of India, Ministry of Science and Technology, New Delhi.
7. Dr. M.D. Patra, Executive Director, Reserve Bank of India, Mumbai.
8. Shri R. Subrahmanym, Additional Secretary (T), Govt. of India, Ministry of Human Resource Development, New Delhi.

Representatives of the ICSSR
9. Dr. V.K. Malhotra, Member-Secretary, Indian Council of Social Science Research, New Delhi.

Representatives of the INSA
10. Dr. Manindra Agrawal, Indian Institute of Technology, Kanpur.
12. Dr. Baldev Raj, President, PSG Institutions, Tamil Nadu.
13. Prof. Yadati Narahari, Department of Computer Science and Automation, Indian Institute of Science, Bangalore.

Representative of the NITI Aayog/ Planning Commission
14. Ms. Anna Roy, Adviser (DM&A), Govt. of India, NITI Aayog, New Delhi.

Representative of the University Grants Commission
15. Prof. Debasis Kundu, Department of Mathematics, Indian Institute of Technology, Kanpur.

Scientists co-opted by the Council
17. Prof. Mihir K Chaudhuri, Vice-Chancellor, Tezpur University, Assam.

Elected representatives of the Institute members not employed in the Institute
18. Prof. Shibdas Bandyopadhyay, Kolkata.
19. Prof. Atis Kr. Dasgupta, Kolkata.
20. Dr. I.K. Ravichandra Rao, Bangalore.

Elected representatives of the employees of the Institute
21. Dr. Partha Pratim Mohanta, Representative of the Scientific Workers.
22. Shri Gouri Sankar Acharya, Representative of the Non-scientific Workers.

Officers of the Institute
23. Prof. Arup Bose, Professor-in-Charge, Theoretical Statistics and Mathematics Division.
25. Prof. Arunava Sen, Professor-in-Charge, Social Sciences Division.
26. Dr. Tapan Chakraborty, Professor-in-Charge, Physics and Earth Sciences Division.
27. Prof. Pabitra Banik, Professor-in-Charge, Biological Sciences Division.
29. Shri Somnath Ray, Head, SQC & OR Division.
30. Prof. Abhay G. Bhatt, Head, Delhi Centre.
32. Dr. D. Sampangi Raman, Acting Head, Chennai Centre.
33. Dr. Amita Pal, Dean of Studies.

Non-Member Secretary
Prof. Barun Mukhopadhyay, Chief Executive (Administration & Finance).
Part I. Teaching & Training, Research and Publications

1. Teaching & Training
   - Degrees and Training Courses
   - Ph.D. Degrees Awarded
   - International Statistical Education Centre

2. Research and other Scientific Activities
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     - Stat-Math Unit (SMU), Kolkata
     - Stat-Math Unit (SMU), Delhi
     - Stat-Math Unit (SMU), Bangalore
   - Applied Statistics Division
     - Applied Statistics Unit (ASU), Kolkata
     - Interdisciplinary Statistical Research Unit (ISRU), Kolkata
     - Applied Statistics Unit (ASU), Chennai
     - Applied and Official Statistics Unit (AOSU), N-E Centre, Tezpur
   - Computer and Communication Sciences Division
     - Advanced Computing and Microelectronics Unit (ACMU), Kolkata
     - Computer Vision and Pattern Recognition Unit (CVPRU), Kolkata
     - Electronics and Communication Sciences Unit (ECSU), Kolkata
     - Machine Intelligence Unit (MIU), Kolkata
     - Documentation Research and Training Centre (DRTC), Bangalore
     - Systems Science and Informatics Unit (SSIU), Bangalore
     - Computer Science Unit (CSU), Chennai
     - Cryptology and Security Research Unit (CSRU), Kolkata
   - Physics and Earth Sciences Division
     - Geological Studies Unit (GSU), Kolkata
     - Physics and Applied Mathematics Unit (PAMU), Kolkata
   - Biological Sciences Division
     - Agricultural & Ecological Research Unit (AERU), Kolkata
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**Part III. Audited Statement of Accounts and Auditor’s Report for the year 2017-2018**
Director’s Report

I am delighted to present before you the Annual Report 2017-18 of the Indian Statistical Institute. This Institute was established by P.C. Mahalanobis in 1931 in Kolkata. It has now grown into a unique institution of higher learning, and is spread over several cities of the country. As in the past, the Institute continues its glorious tradition of disseminating knowledge in Statistics, Mathematics, Computer Science, Quantitative Economics and related subjects. The year 2017-18 saw the Institute continue to flourish under the able leadership and guidance of the ISI President Dr. Vijay Kelkar and the Chairman of the ISI Council, Professor Goverdhan Mehta.

The Institute conducted its 52nd Convocation in January 2018. The Institute was happy to have Nobel Laureate Professor David J. Gross, Chancellor’s Chair Professor of Theoretical Physics, University of California, Santa Barbara, USA as the Chief Guest and Professor S.R.S. Varadhan, Padma Bhushan and winner of the Abel Prize, Courant Institute of Mathematical Sciences, New York University, USA as the Special Guest.

The year 2017-2018 marked the 125th birth anniversary year of P.C. Mahalanobis and was celebrated in a befitting manner through a series of academic programs in Kolkata and the different Centres. The year-long celebrations was inaugurated by the then Hon’ble President of India, Shri Pranab Mukherjee, on June 29, 2017. A few special issues of journals have been envisaged, including those of Sankhya, the journal of Statistics started by Mahalanobis. The Institute hosted a number of distinguished visitors who delivered public talks and seminars. Professor Ada Yonath, Nobel Laureate in Chemistry, visited the Institute on November 29, 2017 and delivered a public lecture titled “From Basic Science to Next Generation Medicine”. The other visitors include Prof. Vijay Raghavan, Secretary, Department of Biotechnology and now the Principal Scientific Advisor to the Government of India, Prof. M.S. Raghunathan, Padma Bhushan awardee, IIT Bombay, Dr. R.B. Barman, Chairman, National Statistical Commission, Prof. Robert Faff, University of Queensland, Australia, Profs. Marc and Francine Diener, University of Nice, France, Prof. Mukul Majumdar, Cornell University, USA, Profs. Stephen Stigler and Robert Rosner, University of Chicago, USA, and Prof. Bani Mallick, Texas A & M University, USA. The twelfth meeting of the Lectures on Probability and Stochastic Processes, popularly known as LPS, was concluded at ISI Kolkata with the main speakers being Prof. Arvind Ayyer, Indian Institute of Science and Prof. Nathanaël Berestycki, University of Cambridge. The Institute for the first time invited two speakers, Prof. Blaz Zupan from University of Ljubljana, Slovenia and Prof. Nicola Santoro from Carleton University, Canada, under the Global Initiative of Academic Networks (GIAN) program of the Government of India. One of the key conferences of PCM 125 celebration, the International Conference in Statistics and Probability was successfully concluded with the active involvement of several of my colleagues, plenary talks by Prof. Regina Liu, Rutgers University and Prof. Christian Robire, Universite Paris-Dauphine and participation from around the globe. On December 18th, 2017, we celebrated the Foundation Day of the Institute with Prof. Bikash Sinha, former Director of the Saha Institute of Nuclear Physics and Variable Energy Cyclotron Centre, dwelling upon his reminiscences of his personal interactions with P.C. Mahalanobis and S.N. Bose. A short documentary on S.N. Bose, President of the Institute from 1967 to 1974, by Shila Dutta was also screened. The 125th Birth Anniversary of JBS Haldane was celebrated on November 6, 2017 with lectures by Prof. Vidyanand Nanjundiah and Science Communicator Pallava Bagla. Besides these, the Institute hosted many more visitors.

I am delighted to announce that as in previous years, a large number of honors and awards have been bestowed upon the scientists and students of the Institute during the past year. I mention some of these here. Ritabrata Munshi has been awarded the Infosys Prize 2017 in Mathematics. He has also been appointed Chief Editor of the Journal of the Ramanujan Mathematical Society in 2017. Sanghamitra Bandyopadhyay, has been awarded the Infosys Prize 2017 in Engineering and Computer Science, and also been selected for the TWAS Prize in Engineering Sciences 2018. Arunava Sen has been selected for the TWAS-Siwei Cheng Prize in Economic Sciences in 2018, Debasis Misra has won the prestigious Social Choice and Welfare Prize for 2018, the first time an Indian has won this prize. D. Yogeshwaran has been awarded INSY Young Scientist award 2017 and Debndulal Dutta Roy has received the Innovative Scientist Award from the Indian Academy of
Health Psychology. Siva Athreya has been invited to Chair the 10th World Congress in Probability and Statistics to be held in Seoul in 2020, a rare honor. Nikhil Pal has been elected President of the Computational Intelligence Society of the IEE and offered Honorary Professor of University of Petroleum China, while V.K. Ramachandran was selected the Vice Chairman of Kerala State Planning Board. Chetan Ghate continues to serve as a member of the Monetary Policy Committee of the Reserve Bank of India that is entrusted with the task of fixing the benchmark policy interest rate to contain inflation within a specified target level. Former Director and currently Raja Ramanna Fellow at the Institute, Sankar K. Pal, has been conferred the Jawaharial Nehru Birth Centenary Lecture Award by Indian National Science Academy. Our young colleague Sushmita Ruj has received an academic grant from Cisco Systems Inc., USA. Discovery of Shringasaurus, a New Horned Reptile of the Middle Triassic Age, has been a major breakthrough by Saswati Bandyopadhyay, our colleague from the Geological Studies Unit, and her team. This has attracted major media attention. The Institute is proud of them.

The regular academic degree programs of the Institute are going strong as usual. The post graduate diploma in statistical methods and applications conducted in the North-East Center of the Institute in Tezpur has now been opened up for students from across the country, with half of the seats being reserved for those domiciled in the North East. The branch in Giridih saw its first Six Sigma program conducted there under the guidance of colleagues from SQC&OR division. The first batch of students of the two-year Post Graduate Diploma in Business Analytics course, conducted jointly with the Indian Institute of Management Calcutta and Indian Institute of Technology, Kharagpur, have graduated in 2017, and have been very well placed. The Statistical Training Diploma, serving officials and students from different countries, is running successfully in ISEC.

The Cell for collaboration with academia, industry and R&D labs has been very active in interacting with the industry and academia from within and outside the country to set up collaborative work. Memorandum of Understandings (MOUs) have been signed/ extended between ISI and several other organizations including Pricewaterhouse Coopers, Wipro Ltd., AXISCADES, Capital One, Dhirubhai Ambani Institute for Information Technology, EID Secretariat at Univ. of Gothenberg, GE India Industrial Pvt. Ltd., Tata Consultancy Services and many others. The Institute continues to undertake a large number of externally funded projects as part of its academic activities. The major funding agencies of the projects are Government of India, Government of West Bengal, DST, DGCIS, DAE, DBT, RBI, NITI Aayog, UGC, Metro Rail, Kolkata, Ministry of Tourism, IBM (USA), Intel Corporation, Samsung (Korea), US Army, London School of Economics, International Growth Centre and European Union Commission. A contract has been signed with five ordnance factories to develop systems to control the quality of weapons and ammunition being manufactured by them for the Indian armed forces. The International Passenger Survey funded by the Ministry of Tourism and led by the Institute scientists has concluded successfully. The Institute is a regular member of the square kilometer array (SKA) India consortium, an international initiative to build the world’s largest telescope. The Centre for research on the Economics of Climate, Food, Energy and Environment (CECFEE), ISI Delhi is a part of the Environment for Development (EfD) Network and is receiving financial support for conducting environment related studies. Apart from these, the Institute is working very closely with the Government of India and various state governments for solving social problems and for improvement of services being offered by the government, in addition to conducting a large number of training programs for government officials.

I remain extremely grateful to Dr. Vijay Kelkar, Padma Vibhusan, President of the Institute and Prof. Goverdhan Mehta, Chairman of the Institute for providing valuable advice at various stages for the smooth functioning of the Institute. I am thankful to the Secretary, Ministry of Statistics and Programme Implementation and all other officials of the Ministry of Statistics and Programme Implementation, Government of India and Members of the Section 8(1) Committee for their active support. Finally, I thank all the scientific and non-scientific workers, students and well-wishers of the Institute for extending their cooperation for the all-round development of the Institute.

March 31, 2018

Sanghamitra Bandyopadhyay
Summary of Activities at a Glance

- **MoU with other Organisations (7 Nos.)**
  (i) Airport Authority of India; (ii) University of Campinas, Brazil; (iii) Environment for Development, University of Gothenburg, Sweden; (iv) G.E. - Indian Industrial Pvt. Ltd; (v) Pricewaterhouse Coopers Private Limited; (vi) Quality Council of India; (vii) Wipro Limited.

- **Number of books published**: 24
- **Number of papers published**: 562
- **Number of Conferences, Workshops and Seminars held (Total – 477)**
  - 23 (Conference)
  - 140 (Workshop)
  - 314 (Seminar)

- **Prestigious Awards and Honours**
  - Ritabrata Munshi (Stat-Math Unit, Kolkata): Infosys Prize in Mathematical Sciences, 2017;
  - Neena Gupta (Stat-Math Unit, Kolkata): B.M. Birla Science Prize in Mathematics, 2017;
  - D. Yogeshwaran (Stat-Math Unit, Bangalore): IISA Young Scientist Award (2017);
  - Abhik Ghosh (ISRU, Kolkata): Bose-Nandi Young Statistician Award (1st Place), 2017;
  - S. Bandyopadhyay (MIU, Kolkata): (1) Distinguished Alumnus Award, IIT, Kharagpur, 2017; (2) National Leadership Award in Science and Technology (Young), Lakshmipat Singhania-IIM Lucknow, 2017; (3) Infosys Prize for Engineering and Computer Science, 2017; (4) J.C. Bose Fellowship, Engineering Sciences, DST, Govt. of India, 2017-22;
  - Rajat K. De (MIU, Kolkata): Fulbright-Nehru Academic and Professional Excellence Fellowship (Flex Award), 2016-2018;
  - Sushmita Mitra (MIU, Kolkata): Fulbright-Nehru Academic and Professional Excellence Fellowship (Flex Award), 2018-2019;
  - Debdal Dutta Roy (PRU, Kolkata): Innovative Scientist Award, Indian Academy of Health Psychology, 2017;

- **Regional Mathematical Olympiad (RMO), 2017**
  - **Date**: 8 October, 2017
  - **Participants**: 471 (West Bengal), 623 (Karnataka)
  - **Successful Students**: 35 (West Bengal), 35 (Karnataka)

- **Indian National Mathematical Olympiad (INMO), 2018**
  - **Date**: 21 January, 2018
  - **Participants**: 70

- **International Statistical Education Centre (ISEC)**
  - **Founded**: 1950
  - **Commencement date of 71st Term**: 01 August, 2017
  - **Number of Trainees**: 25
  - **Countries participated**: Bhutan, Cambodia, Fiji, Mongolia, Myanmar, Nepal, Niger, South Africa, South Sudan, Sri Lanka, Tanzania.
Journey of the Indian Statistical Institute (ISI)

1931-1960:
- P.C Mahalanobis establishes ISI
- First international journal of Statistics in India, Sankhya, Foreword by Rabindranath Tagore
- Path breaking discoveries by ISI scientists:
  - P.C. Mahalanobis - Mahalanobis distance, large scale sample survey method
  - R.C. Bose – BCH Error correcting codes
  - S.R.S. Varadhan – theory of large deviations
  - Bahadur Efficiency and Basu’s Theorem in Statistics
- National Sample Survey conceived in ISI
- UNESCO empowered ISI to train statisticians of developing countries –International Statistical Education Centre (ISEC)
- Second Five-Year Plan drafted
- ISI designs the first analog computer in India
- First digital computer in India, HEC-2M, installed in ISI
- Dinosaur fossil, Barapasaurus tagorei, discovered by ISI geologists

1961-2010
- First digital computer (ISIJU-1) built
- Knowledge-based computing systems
- Precursor to modern AI and Data Analytics research in India
- Genomic Study, Bio informatics, Image Processing, Machine Learning
- Outreach program: North-East and Jharkhand
- Pioneering work in AI, Indian Language Technologies, Population Genomics, Comp. Genetics, Cryptology
- Introduction of Soft Computing Paradigm in India

2011 - till date
- Centre in the North-East of India established for development of the region
- Teaching and training in Official Statistics & Policy Research
- Seminal contributions in Game theory, Algebraic Geometry, Poverty and Inequality measures, Disease Genetics
- Discovery of Shringasaurus
- Centre for (i) Cryptology and Security (ii) Climate, Food, Energy and Environment
- Computational and experimental biology research; cancer, auto-immune and neuro-degenerative diseases

History: Thinking ahead of time
The Indian Statistical Institute, a premier and internationally acclaimed research, teaching and training institute, founded in 1931, is recognized as an institute of national importance by an act of Parliament in 1959.

The Institute has distinguished faculty in statistics, mathematics, computer science, economics and other disciplines of natural and social sciences. Many of them are fellows of Indian National Science Academy, Indian Academy of Sciences, Indian National Academy of Engineering, National Academy of Sciences, India, Institute of Electrical & Electronics Engineers (IEEE) and many other distinguished scientific societies in India and abroad, and also recipients of prestigious awards like S.S. Bhatnagar Prize, Homi Bhaba Award etc.

The Institute offers -

- Post Graduate Diploma in Statistical Methods and Analytics
- Post Graduate Diploma in Business Analytics (PGDBA) jointly with IIT Kharagpur and IIM Calcutta
- Post Graduate Diploma in Computer Applications (PGDCA)
- Junior/Senior Research Fellowships in several areas of natural and social sciences
- Statistical Training Diploma for students from developing countries (through International Statistical Education Centre)

The Institute also confers D.Sc. (Honoris Causa).
Indian Statistical Institute: Locations

Head Quarter (HQ): Kolkata
Centres:
1. Bangalore
2. Chennai
3. Delhi
4. North-East (Tezpur)
5. RC Bose

Branch:
6. Giridih

Outlying SQC & OR Units:
7. Coimbatore
8. Hyderabad
9. Mumbai
10. Pune

Map: Not to the scale
“Silver Jubilee Workshop” organized by Machine Intelligence Unit, ISI, Kolkata on 23 March 2018

Public Lecture by Prof. David Jonathan Gross, Nobel Laureate at ISI, Kolkata on 09 January 2018

A programme on “ISI-Networks” at ISI, Kolkata on 29 January 2018

“P C Mahalanobis Memorial Lecture 2018”, by Prof. Marc Hallin at ISI, Kolkata on 05 February 2018

Prof. S. R. Srinivasa Vardhan delivering a lecture on “The Polaron Measure” at ISI, Kolkata on 08 January 2018

Prof. Nigel Hughes delivering lecture at workshop on “Morphometrics & its Applications in Palaeontology” at ISI, Kolkata on 28 March 2018
Felicitation of Prof. Mukul Majumdar by Prof. S. Bandyopadhyay, Director, ISI for his lecture on “Sustainability & Uncertainty” at ISI, Kolkata on 20 November 2017

Book release function of the publication “An Annotated Chronological History of Indian Statistical Institute, 1931-2006” organized by Reprography & Photography Unit, Library Division on 26 February 2018

Celebration of 71st Independence Day at ISI, Kolkata

Workshop on “Computational Statistics” at ISI, Kolkata organized by Interdisciplinary Statistical Research Unit, ISI during 19-23 March 2018

Inauguration of International Conference on “Future of Libraries: From Promise to Practice” at DRTC Bangalore Centre, ISI during 15-17 November 2017

Training programme on “Career Interest Profile Similarity” organized by Psychology Research Unit on 11 August 2017
A lecture by Prof. Ashis Kumar Chakraborty, SQC & OR Unit, ISI Kolkata on 19 March 2018

Speakers and participants in Mini Symposium on “Big Data and Large Scale Computing” at ISI Delhi Centre on 27 December 2017

National seminar on “Land, Labour and Livelihood Focus and Development of Marginalized Communities and Social Groups” at ISI Giridih Branch during 30-31 January 2018

Participants of Certification programme for “Six Sigma Black Belt” organized by SQC & OR Unit, Hyderabad Centre during 11-16 December 2017

Training programme on “Statistical Techniques for Business Forecasting” organized by SQC & OR, ISI Mumbai Centre during 27-29 December 2017

"Hindi Karyashala” organized by ISI Kolkata on 16 June 2017
Celebration of 125th Birth Anniversary of Prof. Prasanta Chandra Mahalanobis

Many Seminars, Lectures and Conferences were held at the Head Quarters at Kolkata and at various Centres, Branches, Outlying Units of Indian Statistical Institute during 2017-18, as a part of 125th Birth Anniversary Celebration of Prof. P.C. Mahalanobis.

Summary of Programmes at Kolkata

The yearlong celebration started on June 29, 2017 with garlanding the bust of Prof. P.C. Mahalanobis, on his 124th Birth Anniversary. Shri Pranab Mukherjee, the then Hon’ble President of India, inaugurated the ceremony. The Hon’ble Governor of West Bengal, the Hon’ble Minister of Statistics & Programme Implementation, Secretary MoS&PI, Dr. Vijay Kelkar, President of the Institute, Prof. Goverdhan Mehta, Chairman of the ISI Council were also present besides other dignitaries. The Governor of West Bengal released a Pictorial Album on P.C. Mahalanobis and the first copy was presented to Hon’ble President of India.

National Statistics Day was also celebrated in the Institute as a joint programme with Ministry of Statistics & Programme Implementation (MoS&PI), Govt. of India, New Delhi.

The Inaugural session was followed by a second session in Platinum Jubilee Auditorium of the Institute. The Chairman, National Statistical Commission, Secretary, MoS&PI and Guest speakers were present. This session included technical talks by Professors R.L. Brahmachary, K. Vijayraghavan (FRS) and M.S. Raghunathan (FRS), prize distribution for national essay writing competition and series of lectures on the theme of 11th Statistics Day.

The programmes organized throughout the year by the different Units in Kolkata are listed below.

Advanced Computing and Microelectronics Unit, Kolkata

Lecture Series organised:


6. Anil Maheswari, Carleton University, Ottawa, Canada (06.02.2018): Faster algorithms for some optimization problems on collinear points.


Celebration of 125th Birth Anniversary of Prof. PC Mahalanobis


Workshop organised:-


Speakers:

1. Ananth Kalyanaraman (School of EECS, Washington State University, USA)
2. Mainak Chaudhuri (CSE, IIT, Kanpur)

Computer Vision and Pattern Recognition Unit

Workshop organised:-


Topics:-

- Pattern Recognition
- Machine Learning
- Medical Image Analysis
- Document Analysis
- Object Spotting and Tracking
- Data mining
- Biometrics
- Sensor Data Analysis
- Language Understanding

Invited Lectures:-

2. Partha Pratim Talukdar (Indian Institute of Science (IISc), Bangalore): Knowledge Graphs.
7. Monojit Choudhury (Microsoft, Bangalore): Is language too deep to learn? Yes, even if not "literally".


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**Electronics and Communication Sciences Unit**

**Conference organised:-**


**Speakers:**

1. Robert M. Haralick (Graduate Center, City University of New York, USA)
2. Sargur Srihari (University at Buffalo, The State University of New York, USA)
3. Edwin R Hancock (Department of Computer Science, University of York, UK)
4. Laurent Najman (Laboratoire d'Informatique Gaspard Monge, ESIEE Universite Paris-Est, France)

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**Cryptology and Security Research Unit, Kolkata**

**Workshop organised:-**


**Speakers:**

1. Sugata Gangopadhyay (IIT Roorkee)
2. C. Pandu Rangan (IIT Madras)
3. Shashwat Raizada (REBI and Ex-Indian Navy)
Celebration of 125th Birth Anniversary of Prof. PC Mahalanobis

Economic Research Unit, Kolkata

Symposium organised:-


Speakers:

1. Amiya Kumar Bagchi (Emeritus Professor, IDSK)
2. Asis Kumar Banerjee (Former Vice-Chancellor, University of Calcutta)
3. Raghab Chattopadhyay (Former Professor of Economics, IIM, Calcutta)
4. Pronab Sen (Country Director, IGC India Central and former Chief Statistician, GoI)

Chair:

- Dipankar Dasgupta (Former Professor, ISI)

Population Studies Unit, Kolkata

Workshop/ Training Programme organised:-

1. Workshop on “Non-Social Cognition and Intelligence using WAIS-IV (NSCI)”: PSU, Kolkata, December 4-8, 2017.

2. Training Programme on “R- Programming for Behavioural Data Examination” (For Post-Graduate & Researchers): PSU, Kolkata, March 14-25, 2018.

Summary of Programmes at Delhi

The yearlong celebration started on June 29, 2017, by garlanding the bust of Prof. P.C. Mahalanobis, on his 124th Birth Anniversary. The next event was Tree Plantation by senior most workers of ISI, Delhi Centre. This was followed by welcome address by Head, Delhi Centre and speech by Prof. R.B. Bapat who was the chief guest.

In the evening, Academic Programmes were organized at the Auditorium, in which Prof. R.L. Karandikar, Director, Chennai Mathematical Institute and Dr. Arvind Subramanian, Chief Economic Adviser, Govt. of India were speakers.

Several special lectures/meetings were organized throughout the year in honour of Prof. P.C. Mahalanobis:

Lecture Series organised:-

Celebration of 125th Birth Anniversary of Prof. PC Mahalanobis


3. Francine Diener, Laboratoire Jean Dieudonne, Nice, France (11.10.2017): “How to fit a jump diffusion model to return prices?


6. Dilip Mookherjee, Professor, Boston University, USA (09.03.2018): Communities, Networks and Development.

Symposium organised:-


Summary of Programmes at Bangalore

The centre had yearlong celebration to commemorate 125th Birth Anniversary of Professor PC Mahalanobis. The main programmes consisted of series of lectures by distinguished visitors from various academic fields addressing the general audience. Units have also conducted special academic programmes to commemorate this. The details of Special Lectures are as hereunder:

Stat-Math Unit, Bangalore

Lecture Series organised:-


5. Anil Gupta, IIM, Ahmedabad and Honey Bee Network (07.11.2017): Modelling and research gaps in inclusive innovation research.


7. Amman Madan, Azim Premji University, Bangalore (06.3.2018): Identity politics in school curricula: post-modernism and the problem of academic knowledge.
Celebration of 125th Birth Anniversary of Prof. PC Mahalanobis


11. Mukund Thattai, National Centre for Biological Sciences, Bangalore (17.10.2017): Possible and Impossible Cells.

**Documentation Research and Training Centre, Bangalore**


**Systems Science and Informatics Unit, Bangalore**

1. Upinder S. Bhalla, National Centre for Biological Sciences, Bangalore: Sequence Computation In the Brain Through Sub cellular Mechanisms.

**Economic Analysis Unit, Bangalore**


**Summary of Programmes at Chennai**

The 12th Statistics Day and the 125th Birth Anniversary celebration of Professor P.C. Mahalanobis was organized in a grand manner at Chennai Centre.

**Lecture Series organised:-**


2. V. Swathi, Loyola College: Development of a Geriatric Home Assessment Toll.


**Summary of Programmes at North-East Centre, Tezpur**

The North-East Centre of ISI organized several events to commemorate the 125th birth year of Professor P. C. Mahalanobis. It was followed by visit to the site of construction of the permanent campus of the North-East Centre. The documentary on the life of Professor P. C. Mahalanobis and
Celebration of 125th Birth Anniversary of Prof. PC Mahalanobis

rich legacy of ISI, ‘The Taming of Chance’ was screened. The following distinguished speakers presented lectures on the topics mentioned below during the two-day event.

**Symposium organised:-**


5. "Professor Prasanta Chandra Mahalanobis Memorial Quiz Competition": February 06, 2018, ISI, N-E Centre, Tezpur.


**Lecture Series organised:-**

1. Partha Pratim Majumder (Distinguished Professor & Ex-Director, National Institute of Biomedical Genomics; Retired Professor, ISI Kolkata): (i) Prasanta Chandra Mahalanobis: A Firm Believer of Science and Rationality & (ii) Understanding Structure and Relationships of Indian Ethnic Groups: The Legacy of Prasanta Chandra Mahalanobis.

2. Sanghamitra Bandyopadhyay (Director, ISI): Introduction to Clustering.


5. Ravindra Shripad Kulkarni (Distinguished Professor, Bhaskaracharya Pratishthana; Ex-Director, Harish-Chandra Research Institute): (i) Algorithmic Construction of Finite Representation of Solvable Graphs & (ii) Philosophy of Mathematics.

6. Probal Chaudhuri, ISI Kolkata: Shape of the Earth, Motion of the Planets, and the Method of Least Squares.

**Summary of Programmes at Giridih**

The Indian Statistical Institute Giridih celebrated 125th Birth Anniversary of Professor Prasanta Chandra Mahalanobis by organising several academic events during 2017-18.
Celebration of 125th Birth Anniversary of Prof. PC Mahalanobis

Stat-Math Unit, Kolkata

Conference organised:-


Sociological Research Unit, Giridih

Conference organised:-


Speakers:

1. Gurdeep Singh (IIT-ISM, Dhanbad & Former Vice Chancellor, Vinoba Bhave University, Hazaribagh).
2. Dipti Ranjan Sahu (Lucknow University & Present Secretary).
3. Vijoy Shankar Sahay (Indian Sociological Society, and Professor (emeritus)).

Agricultural and Ecological Research Unit, Giridih

Symposium organised:-


Speakers:

1. Birendra Kumar Sinha (Former Union Secretary of Ministry of Rural Development, Govt. of India & Supreme Court Advocate).
2. Biswarup Mandal (Pro-Vice Chancellor of BCKV, Kalyani, West Bengal).
3. Partha Nath Mukherjee (JNU & Former Director of Tata Institute of Social Sciences).
Inaugural programme of National Celebration of 125th Birth Anniversary of Prof. Prasanta Chandra Mahalanobis on 29 June 2017

Dr. Vijay Kelkar, President, ISI at garlanding ceremony of 125th Birth Anniversary of Prof. Prasanta Chandra Mahalanobis on 29 June 2017

Prof. Ada Yonath, Nobel Laureate, delivering a public lecture at ISI, Kolkata on 29 November 2017
“Students’ meet with eminent academicians – 2018” at ISI North-East Centre, Tezpur during 22-24 March 2018

Prof. Bikas Sinha (Padma Bhushan), delivering public lecture on “Remembering S N Bose and P C Mahalanobis” at ISI on 18 December 2017

Felicitation of Prof. Robert Rosner by Prof. S. Bandyopadhyay, Director, ISI on 14 December 2017

Prof. S. Bandyopadhyay, Director, ISI felicitating Prof. Sai Tou Naruya, Japan at symposium organized by Biological Science Division on 07 November 2017

Tezpur Students’ meet with eminent academicians – 2018 at ISI North-East Centre, Tezpur during 12-24 March 2018

Training on “Re-Programming for behavioral data examination for post-graduate students and researchers” organized by Psychology Research Unit, ISI, Kolkata during 14-15 March 2018
Prof. S. Bandyopadhyay, Director, ISI inaugurating the programme “Remembering J B S Haldane on his 125th Birthday” on 06 November 2017.

Workshop on “Statistical Methods and R-Programming for Biologists”, organized by Agricultural & Ecological Research Unit, ISI during 07-13 March 2018.

Dr. B Meenakumari, Chairperson NBA at a workshop on “Economic and Ecological Impacts of invasive Alien Species” on 21 February 2018.


“5th India Biodiversity Meet-2018” International Conference at ISI Kolkata, organized by Agricultural & Ecological Research Unit, ISI during 15-17 March 2018

Symposium on “Recent Trends in Operations Research and Data Science” organized by SGC & OR Unit, ISI, Kolkata on 19 December 2017

Conference on “Frontiers of Statistical Physics” organized by Physics & Applied Mathematics Unit, ISI Kolkata during 26-28 February 2018

Second session programme of “National Celebration of 125th Birth Anniversary of Prof. Prasanta Chandra Mahalanobis” on 29 June 2017

2nd International Workshop on “Pattern Analysis & Applications” organized by Computer Vision and Pattern Recognition Unit, ISI, Kolkata during 29-31 January 2018
RECENT CENTRES

A Brief Account of Academic Activities at North-East Centre of Tezpur, Assam

The North-East (N-E) Centre of the Institute was established at Tezpur, Assam on 23rd July, 2011. It was inaugurated by Shri Pranab Mukherjee, the then Finance Minister, Govt. of India and the then Chairman, Indian Statistical Institute Council.

The Post-Graduate Diploma in Statistical Methods and Analytics (PGDSMA) course has been running successfully at the N-E Centre. All successful students with First Division have been, as per the Memorandum of Agreement, absorbed by Tata Consultancy Services (TCS).

The research topics of this Centre include: Psychosocial work characteristics and health (mainly depression and work stress) with applications of advanced statistical methods e.g. mixed models, structural equation models, autoregressive models, multilevel models etc.; Understanding determinants of healthy life expectancy (involved in the EU-funded project, IDEAR with researchers from Sweden, Denmark, Finland, UK and France); A research project studies the implications for lexicographic preferences of behavioural traits of people which are naive. This study analyses two different classes of traits. This study is a theoretical one. Given the ubiquity of lexicographic preference in experimental studies, these projects can contribute to the understanding of lexicographic behaviour observed in experimental studies; Negative externalities due to private consumption are well studied issues in environmental economics, and especially its implications for market failure. A project is trying to understand the issue as a planner's problem. Findings reveal that it is possible to design institutions where people have incentive to tell the truth about their needs, such that outcomes of such institutions can avoid inefficiency; A research project provides an alternative explanation of standard dictatorial and ultimatum games based on outcomes instead of intrinsic normative concerns. It provides a theoretical foundation using a mechanism design approach. The main theoretical result is that in the Bayesian Nash Equilibrium of the game that we have designed, people leave money on the table; Change detection around Kaziranga National Park; Crop health monitoring around Tezpur; Applications of Deep Learning in Medical Imaging; Analysis of atmospheric particulate matter removal using satellite imagery derived vegetative cover; Retrieval of historic atmospheric Black Carbon concentration in the Arctic Region and North America; Profile analysis of polycyclic aromatic hydrocarbons (PAHs) in environmental matrices; Carbon foot-printing of the Indian tea industry; Morphological and chemical characterisation study of dust; Systematic review and Meta-analysis of RCTs on maternal and child nutrition; Meta-analysis combining parallel and cross-over randomized controlled trials to assess impact of fortified foods on serum levels of concentration among children & infants; Current nutritional status of under five year children in India: a retrospective study.

Five workshops and training programmes were organised by the N-E Centre during this year. This includes two which were organised by AOSU of the N-E Centre. The Centre also hosted three other workshops and training programmes, which were organised by different Units from the Headquarters. Three scientific papers were published in journals, two in conference proceedings, and one in an edited book. One book has been published. Four faculty members visited several national institutions and one institution abroad on scientific/academic assignments.

A Brief Account of Academic Activities at RC Bose Centre for Cryptology and Security, Kolkata

R.C. Bose Centre for Cryptology and Security is a new centre of the Indian Statistical Institute at Kolkata. It aims to promote interdisciplinary research in Mathematics, Computer Science and Statistics towards furtherance of teaching, research as well as training and development in Cryptology and
Recent Centres

Cyber Security. The Centre acts as a hub for all cryptographic requirements, cutting-edge research activities and technology development in relevant fields, in order to create a critical mass of researchers and experts to fulfil the growing demand in the national and international arena. As in previous years, in 2017-18 the Centre has provided direction and advice to various wings of Armed Forces, DRDO, Police Organisations and Security Agencies. A new certificate course in Cryptology and Data Security has been started this year specially designed for defence personnel. A total of 13 officers from various defence services are enrolled in this years’ course. Many externally funded projects funded by Samsung, NettApp Inc., Cisco Systems Inc. etc. were also carried out this year.

As part of capacity building at the national level, the Centre has provided dedicated research internship program in Cryptology and Security to senior undergraduate and fresh post-graduate students from premier institutions of the country. A two-month intensive training in Cryptology is given during summer every year where the interns are given some basic courses in all aspect of Cryptology and Security. Many workshops and training programs have also been conducted for the students of colleges in and around Kolkata. The R.C. Bose Centre is engaged in cutting-edge research in various aspects of Cryptography. The main focus areas of research are: Quantum Information and Quantum Cryptography, Symmetric Key Cryptanalysis, Steganography, Cloud Security, Blockchains, Hardware implementations, Internet of Things. The number of papers published/accepted in reputed international journals in this period is 14.

The Centre continues continue to collaborate with leading experts from many academic institutions from around the world and had several visitors during this period. The faculty members have also visited many institutions for collaborative work. The R.C. Bose Centre will continue to act as a national hub for cryptographic requirements, cutting-edge research activities and indigenous capacity building in all relevant fields of study.

A Brief Account of Academic Activities at Chennai Centre

Chennai Centre of Indian Statistical Institute was declared open by Shri Pranab Mukherjee the then Chairman of ISI Council and External Affairs Minister, Govt. of India on 26th July 2008. During the year 2011, a Post Graduate programme called M. Stat. was introduced. By 2012, several units like Applied Statistics Unit and Computer Science Unit were introduced besides the already functioning SQC & OR Unit. At present there are 12 faculty members belonging to these three units.

Initially Chennai Centre had offered M. Stat (Applications) in the year 2011 and from 2013 1st year of M. Stat (NB-Stream) was offered till 2017. All these students would then pursue their 2nd year at ISI, Kolkata. Every year one or two students travel to Netherlands for doing their Internship at University of Groningen.

The research interest of faculty are Game Theory, Multi Objective Programming, Linear Complementarity Problems and its variants, Reliability, Statistical Finance, Harmonic mappings, Composition Operators, Quasiconformal and Special functions, Several complex variables, Semi definite Complementarity problems, Stochastic games, Bootstrap methods for High-dimensional Time Series, Cognitive models of strategic reasoning, Topological Quantum Computing, methods and materials, Development of quantum field theory for random and interacting systems etc.

The Centre is also engaged with various corporates on assignments related to Quality Management and Operations Research.

Our new campus at Karapakkam is being developed. Boundary wall work was over and the earth filling work is under progress. Chennai Centre along with scientists from HQ is also actively engaged with GoTN to carryout projects for the development of Tamil Nadu. Also faculty from this Center are involved with conduct of training for various department of GoTN.
A BRIEF HISTORY OF THE INSTITUTE

In the 1920’s, Prasanta Chandra Mahalanobis, then a Professor at Presidency College, Calcutta conducted several studies employing statistical methods with results that vindicated his ideas about the efficacy and possibilities of the emerging science of Statistics. In a meeting on 17th December 1931 presided by Sir R.N. Mukherjee, the first President of the Institute, the Indian Statistical Institute (ISI) was formally established and Prasanta Chandra Mahalanobis was appointed the Honorary Secretary. The Indian Statistical Institute was registered on 28th April, 1932, as a non-government and non-profit distributing learned society under the Societies’ Registration Act No. XXI of 1860. The Institute is now registered under the West Bengal Societies Registration Act XXVI of 1961, amended in 1964. It has the following objectives:

(i) To promote the study and dissemination of knowledge of Statistics, to develop statistical theory and methods, and their use in research and practical applications generally, with special reference to problems of planning for national development and social welfare;

(ii) To undertake research in various fields of natural and social sciences with a view to the mutual development of Statistics and these sciences;

(iii) To provide for, and undertake, the collection of information, investigations, projects, and operational research for purposes of planning and the improvement of efficiency of management and production.

(iv) To undertake any other ancillary activities in fulfillment of the objectives (i), (ii) and (iii).

The Institute started functioning initially from a room of the Presidency College with enduring support from a number of distinguished personalities and devoted scholars in Kolkata. Over the first two decades, which turned out to be a glorious chapter in the annals of Indian science and institution building, the ISI embarked upon a series of pioneering programmes involving the application of Statistics in search of solution of the urgent and live problems of the country. Such programmes included innovative projects on sample surveys of yield and land utilisation of crops, socio-economic after-effects of Bengal famine and problems of flood research. These innovations and methodological research have since become classics in Statistics. At the same time, the training of scientific personnel began to grow. This also encouraged high level research and brought into focus the need for publication of the research results, for which Sankhyâ, the first international journal of the country in Statistics, came into being in 1933.

Apart from the impact made in the world of Statistics, the Institute held a pivotal role in the task of nation building, when India became independent, through the brilliant choice of the area of surveys, which were socially and nationally relevant. The patronage and invaluable contribution of Sir Ronald A. Fisher played an important role. Led by Professor Mahalanobis and a very able group of younger statisticians including R.C. Bose, S.N. Roy and C.R. Rao, the Institute was poised to take on the larger role. The Institute is proud to have C.R. Rao, who is among the world leaders in statistical science over the last six decades and still active at the age of 93 as the Director of the Center for Multivariate Analysis at Pennsylvania State University, USA, in its list of alumni.

The 1950s saw the Institute establishing (i) a full fledged research and training school in Statistics and Probability, with its application in natural and social sciences, (ii) a planning wing entrusted with the formulation of the Second Five-Year Plan of India, (iii) publication of Sankhyâ, (iv) the National Sample Survey wing engaging in comprehensive socio-economic data collection for the nation, (v) a string of Statistical Quality Control units for promoting the quality movement at various industrial centres in the country, (vi) a collaboration with the International Statistical Institute to train Government statisticians from Asia and Africa, and (vii) an Electronic Computer Laboratory that was responsible for developing (a) the 1st mechanical hand computing machine, (b) the 1st Analog computer, (c) the 1st Punched Card storing machine and (d) the 1st Solid State Computer in India, to name some of the principal activities. In 1954 Pandit Jawaharlal Nehru, the then Prime Minister of India, entrusted
Professor Mahalanobis and ISI with the responsibility of preparing the draft Second Five-Year Plan for the country. The draft submitted by Prasanta Chandra Mahalanobis and the planning models formulated by him and his colleagues have since been regarded as major contributions to economic planning in India. In 1956, the Institute installed the first electronic computer in the country. In 1961, the ISI, in collaboration with Jadavpur University, undertook the design, development and fabrication of a fully transistorized digital computer, called ISI-JU-1, which was commissioned in 1966. The Institute, from its formative period till present times, received as guests eminent scientists, some of whom were Nobel Laureates. Besides Ronald A. Fisher, J.B.S. Haldane and Walter A. Shewhart, the luminaries included Frederic and Irene Curie, Neils Bohr, A.N. Kolmogorov, P.M.S. Blackett, J.D. Bernal, Joan Robinson, Genichi Taguchi and George Akerlof, 2001 Nobel prize winner in economics and a visiting professor of ISI during 1967-68. In recent times, the visit of Amartya K. Sen, Robert Aumann, Lothar A. Zadeh, Joseph E. Stiglitz, Sir James A. Mirrlees, Eric Maskin, Ei-ichi Negishi, Ada Yonath, David Jonathan Gross and S.R.S. Varadhan, 2001 Nobel prize winner for his contributions to probability theory and an alumnus of the institute, may be specially mentioned.

The formal recognition came in December 1959, when Pandit Jawaharlal Nehru piloted in the Parliament the enactment of the Indian Statistical Institute Act of 1959, which designated ISI as an ‘Institution of national importance’. The activities steadily grew, existing interests became more broad-based and a number of science units were created in the interest of live interaction between Statistics and Natural and Social Sciences. Empowered by the Act to award degrees, the Institute started the B. Stat. and M. Stat. courses. An excellent library was founded at Kolkata and the Documentation Research and Training Centre began functioning in Bangalore. Other developments in infrastructure also began.

During 1971-72, two decisions of the Government of India produced serious repercussions on the functioning of the ISI. One was de-linking of the Institute from the Perspective Planning Division of the Planning Commission in 1971, while the other was the separation of National Sample Survey from the ISI and its take-over by the Central Government in 1972. Professor Mahalanobis passed away on 28th June, 1972. It was a critical period for the Institute. To overcome the problem, the ISI sought to strike a judicious balance between the individual academic work on truly fundamental problems and the work that called for a greater engagement with the social and economic problems of the country. The members of the Institute, under the Chairmanship of Shri P.N. Haksar, held a Special General Body Meeting on 26th July, 1974 and amended the Memorandum of Association and the Regulations of the Institute, encouraging more inter-disciplinary research and enhancing active participation of the scientists of the ISI in decision-making process of the Institute. The organisational amendments were implemented, with the concurrence of Government of India, in August, 1976. The various research units in natural, social and computer sciences were grouped under a number of scientific Divisions.

Over the decades diversity in research thrusts began to grow manifold, with emphasis on Computer Science and application of Statistics in the new areas of research in natural and social sciences. Two centres, one at Delhi and one at Bangalore were created with full-fledged research and teaching programmes. The Delhi Centre, initially housed within the Planning Commission premises, was started in 1974, and shifted to its present campus in 1975. The Bangalore Centre was conceived by Prof. P.C. Mahalanobis during 1960s. With the Statistical Quality Control unit functioning in Bangalore from 1956, and Documentation Research and training Centre from 1962, Professor Mahalanobis thought of starting a centre of ISI around the mid-sixties. However, the activities of the Bangalore Centre started in September 1978 in a rented building under the Directorship of Professor G. Kallianpur. The various units moved to the present campus in May 1985 and in September 1996, the Bangalore Centre was formally declared as a Centre of ISI. The Chennai centre of the Institute came into being on 26th July, 2008 and has to its credit several theoretical and applied research work in Statistics and Mathematics, and many of the projects undertaken have been breakthrough applications. A North-East Centre of the Institute has been established at Tezpur, Assam on 23rd July, 2011 and it is also expected to focus on such diversity of teaching, training and research. This centre is currently housed in Tezpur University campus. The Post-Graduate Diploma in Statistical Methods and Analytics (PGDSMA) course has been running successfully at the N-E Centre, Tezpur. The Institute has started offering a
brief history

The Institute is fully funded by the Ministry of Statistics & Programme Implementation, Govt. of India. The support and encouragement of the Ministry of Statistics & Programme Implementation, Govt. of India are among the major factors which are helping the Institute to sustain its academic growth and excellence. The Ministry provides funds to the Institute under Plan & Non-Plan budget as per the recommendations of a committee set up for the purpose by the Ministry of Statistics & Programme Implementation, Govt. of India under Section 8(1) of the "Indian Statistical Institute Act. 1959, No. 57 of 1959" based on the programme of research, teaching, training and various academic activities. The grants-in-aid provided by the Ministry of Statistics & Programme Implementation, Govt. of India to the Institute includes the funds required for construction of buildings, hostels, guest house, purchase of equipments, hiring manpower etc. The Ministry plays a pivotal role in expansion of the research & training activities of the Institute by way of opening its new Centres in various parts of the country. The North-East Centre at Tezpur, Assam which was inaugurated by Shri Pranab Mukherjee, the then Finance Minister, Govt. of India and the then Chairman, Indian Statistical Institute Council in the presence of Shri Srikant Jena, Hon'ble Union Minister for Ministry of Statistics & Programme Implementation, Govt. of India; Shri Tarun Gogoi, Hon'ble Chief Minister, Govt. of Assam; Dr. T.C.A. Anant, Secretary, Ministry of Statistics & Programme Implementation, Govt. of India and other dignitaries. In July 2012, the Ministry of Statistics & Programme Implementation, Govt. of India approved establishment of R.C. Bose Centre for Cryptology and Security as a separate Centre of the Institute.

The present structure of eight divisions has been arrived at through some further changes. Recently there have been some changes. Systems Science and Informatics Unit (SSIU) has been started as a part of the Computer and Communication Sciences Division (CCSD) at ISI Bangalore centre in August 2009. The Documentation Research and Training Centre (DRTC) has been made a part of CCSD. Cryptology and Security Research Unit (CSRU) also became a part of CCSD since April, 2014. Which is an integral component of R.C. Bose Centre for Cryptology and Security, Kolkata, a national hub for cryptographic requirements. The Indian Statistical Institute Act of 1959 was amended by the Parliament in 1995 to empower the Institute to award Degrees/Diplomas not only in Statistics, but also in Mathematics, Quantitative Economics, Computer Science and such other subjects related to Statistics as may be determined by the Institute from time to time. Several new courses have also been added since: M. Tech. in Computer Science, M. Tech. in Quality, Reliability and Operations Research, M.S. in Quantitative Economics, B. Math. and M. Math.

In conclusion, a list of the distinguished scientists and statesmen who have served the Institute during the 86 years of its existence in the capacities of President, Chairman or Director is presented. A list of recipients of the honorary D. Sc. degree given by the Institute is also provided.

Presidents of the Institute

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Years</th>
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<tbody>
<tr>
<td>1</td>
<td>Sir Rajendra Nath Mookerjee</td>
<td>1932-35</td>
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<td>2</td>
<td>Shri E.C. Benthall</td>
<td>1936-37</td>
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<td>3</td>
<td>Shri James Reid-Kay</td>
<td>1938</td>
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<td>4</td>
<td>Shri Badridas Goenka</td>
<td>1939-41</td>
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<td>5</td>
<td>Dr. Nalin Ranjan Sarkar</td>
<td>1942-43</td>
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<td>6</td>
<td>Dr. Chintaman D. Deshmukh</td>
<td>1944-63</td>
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<td>7</td>
<td>Shri Y.B. Chavan</td>
<td>1964-66</td>
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<td>8</td>
<td>Prof. Satyendra Nath Bose</td>
<td>1967-75</td>
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<td>9</td>
<td>Shri Subimal Dutt</td>
<td>1976-89</td>
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<td>10</td>
<td>Prof. M.G.K. Menon</td>
<td>1990-2012</td>
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<td>11</td>
<td>Dr. C. Rangarajan</td>
<td>2012-16</td>
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<tr>
<td>12</td>
<td>Dr. Vijay Kelkar</td>
<td>2016-till date</td>
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Brief History

Chairmen of the Institute

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<tr>
<th>No.</th>
<th>Chairman</th>
<th>Years</th>
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<tr>
<td>1</td>
<td>Shri B. Rama Rao</td>
<td>1954</td>
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<td>2</td>
<td>Shri D.N. Mitra</td>
<td>1955-63</td>
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<td>3</td>
<td>Shri K.P.S. Menon</td>
<td>1964-70</td>
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<td>4</td>
<td>Shri S.C. Roy</td>
<td>1971</td>
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<td>5</td>
<td>Dr. Atma Ram</td>
<td>1972</td>
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<td>6</td>
<td>Shri P.N. Haksar</td>
<td>1973-97</td>
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<td>7</td>
<td>Dr. Bimal Jalan</td>
<td>1998-2001</td>
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<td>8</td>
<td>Dr. N.R. Madhava Menon</td>
<td>2002-03</td>
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<td>9</td>
<td>Shri Pranab Mukherjee</td>
<td>2004-12</td>
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<td>10</td>
<td>Shri A.K. Antony</td>
<td>2012-14</td>
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<td>11</td>
<td>Dr. Arun Shourie</td>
<td>2014-16</td>
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<td>12</td>
<td>Prof. Goverdhan Mehta</td>
<td>2016- till date</td>
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Directors of the Institute

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<tr>
<th>No.</th>
<th>Director</th>
<th>Start</th>
<th>End</th>
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<tbody>
<tr>
<td>1</td>
<td>Prof. P.C. Mahalanobis</td>
<td>Dec 1931</td>
<td>June 1972</td>
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<tr>
<td>2</td>
<td>Prof. C.R. Rao</td>
<td>July 1972</td>
<td>June 1976</td>
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<td>3</td>
<td>Prof. G. Kallianpur</td>
<td>July 1976</td>
<td>Sept 1978</td>
</tr>
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<td>4</td>
<td>Prof. B.P. Adhikari</td>
<td>Aug 1979</td>
<td>Oct 1983</td>
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<td>5</td>
<td>Prof. Ashok Maitra</td>
<td>April 1984</td>
<td>Jan 1987</td>
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<tr>
<td>6</td>
<td>Prof. J.K. Ghosh</td>
<td>Jan 1987</td>
<td>Jan 1992</td>
</tr>
<tr>
<td>7</td>
<td>Prof. B.L.S. Prakasa Rao</td>
<td>Jun 1992</td>
<td>Feb 1995</td>
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<td>8</td>
<td>Prof. S.B. Rao</td>
<td>July 1995</td>
<td>July 2000</td>
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<td>9</td>
<td>Prof. K.B. Sinha</td>
<td>Aug 2000</td>
<td>July 2005</td>
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<td>10</td>
<td>Prof. S.K. Pal</td>
<td>Aug 2005</td>
<td>July 2010</td>
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<tr>
<td>12</td>
<td>Prof. Sanghamitra Bandyopadhyay</td>
<td>Aug 2015</td>
<td>till date</td>
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</table>

List of persons awarded the D.Sc. (Honoris Causa) by the Institute

- February 1962: Prof. Satyendra Nath Bose, Prof. Ronald A. Fisher, Pandit Jawaharlal Nehru, Dr. Walter A. Shewhart
- April 1962: Prof. A.N. Kolmogorov
- May 1965: Dr. Chintaman Dwarkanath Deshmukh
- December 1974: Prof. Raj Chandra Bose, Dr. M.V. Keldysh, Prof. Jerzy Neyman
- February 1977: Prof. Harald Cramer
- February 1978: Shri Morarji Desai, Prof. L.V. Kantorovich
- December 1989: Prof. C.R. Rao
- January 2001: Prof. Gopinath Kallianpur
- February 2004: Prof. S.R. Srinivasa Varadhan
- March 2006: Prof. L.A. Zadeh
- December 2006: Dr. Manmohan Singh
- February 2011: Dr. Subhas Mukherjee (Posthumously)
- January 2013: Prof. K.R. Parthasarathy, Prof. Jayanta Kr. Ghosh, Prof. Pranab Bardhan
1. TEACHING AND TRAINING

A brief account of teaching and training activities of the Teaching and Training Division during the academic session 2017-2018 is given below.

**Degree and Training Courses**

During the academic session 2017-2018, a total of 23975 candidates applied for admission and were called for written selection tests for various programmes offered by the Institute, viz., B. Stat. (Hons.), B. Math. (Hons.), M. Stat., M. Math., Master of Science (M.S.) in Quantitative Economics, Master of Science (M.S.) in Quality Management Science, Master of Science (M.S.) in Library and Information Science, M. Tech. in Computer Science, M. Tech. in Quality, Reliability and Operations Research, Post Graduate Diploma in Statistical Methods and Analytics, Post Graduate Diploma in Computer Applications, Post Graduate Diploma in Business Analytics, Research Fellowships in Statistics, Mathematics, Quantitative Economics, Computer Science, Quality, Reliability and Operations Research, Physics, Agricultural Chemistry & Soil Science, Geology, Library and Information Science, Linguistics, Sociology and Psychology. Admission tests were conducted at 49 different centres. A total of 16071 candidates finally appeared for admission tests and a total of 1440 candidates qualified in the written tests and were called for interviews. Based on performance in the written tests, interview and the academic records, 397 candidates were offered admission to various courses during the academic session under review.

The annual examinations for all the regular courses during 2016-2017 academic session were held during May 2017. The 2017-2018 academic session commenced from July, 2017.

The number of candidates admitted to the different degree, Diploma programmes and in Junior Research Fellowship during 2017-2018 and the number of students who passed the annual examinations in 2017, are given in Table 1.

Till 31st March, 2018, 135 trainees in Mathematics, Statistics, Engineering and Technology from various Universities/Institutions (Academy of Technology, Amrita Vishwa Vidyapetham, Kolam; Asutosh College, Kolkata; B.R. Ambedkar National Institute of Technology, Jalandhar; Ballygunge Science College, Kolkata; Bengal School of Technology; Bidhan Nagar College; BIT, Zuarinagar; Camellia Institute of Technology, Kolkata; CMC, Vellore; Cochin University of Science & Technology; Department of Technology and Biotechnology, West Bengal; Doon University; Electronics and Telecommunication Engineering, Raipur; Government College of Engineering and Leather Technology, Kolkata; Guru Nanak Institute of Pharmaceutical Science & Technology, Panihat; Heritage Institute of Technology, Kolkata; Hyderabad University, Hyderabad; IEST, Shibpur; IIIT, Chittoor; IISER, Berhampur; IISER, Kolkata; IIT, Delhi; IIT, Kanpur; IIT, Guwahati; IIT, Kharagpur, IIT, Mumbai; IIT, Patna; IIT, Roorkee; Indian Institute of Information Technology, Jabalpur; Indian Institute of Science Education and Research; Indian Institute of Space Science and Technology; Indian National Science Academy, New Delhi; Institute of Engineering & Management, Kolkata; ISM, Dhanbad; International Institute for Population Sciences, Mumbai; Jadavpur University, Kolkata; Jalpaiguri Government Engineering College, Jalpaiguri; Kalyani University, Kalyani; IIIT University, Bhubaneswar; National Institute of Technology, Durgapur; NIT, Rourkela; NIT, Tiruchirappalli; Pondicherry University; RCCIIT, Kolkata; Savitribai Phule Pune University, Pune; SRM University, Chennai; SMIT, Majitar; St. Xavier’s College, Kolkata; Techno India University, Kolkata; Techno India, Kolkata; University of Calcutta; University of Delhi; VIT, Vellore) received four weeks/six weeks/two months/three months/four months and six months Project training in different Units of the Institute, viz., ACMU, AERU, ASU, CSSC, CVPRU, ECSU, GUS, HGU, MIU, PAMU, SMU, SOSU and SQC & OR Unit under the guidance of different faculty members of the Institute.
Teaching and Training

Convocation

The 52nd Convocation of the Indian Statistical Institute was held on 9th January, 2018, at 11.00 A.M. It started with a Vedic Hymn by the ISI Club, followed by a welcome address by Dr. Vijay Kelkar, President, ISI, annual review by Prof. Sanghamitra Bandyopadhyay, Director, ISI and a Convocation Address by Professor David Jonathan Gross, Nobel Laureate, University of California Santa Barbara. Degrees and Diplomas were awarded to students by Dr. Vijay Kelkar. The Convocation was closed by Dr. Vijay Kelkar, after a vote of thanks by Dr. Amita Pal, Dean of Studies, ISI and the National Anthem by ISI Club. The list of recipients of various medals and prizes is given below.

**Prasanta Chandra Mahalanobis Gold Medal** for the most outstanding performance in M. Stat. students (2015-2017):

Ambarish Chattopadhyay

ISI Alumni Association **Mrs. M.R. Iyer Memorial Gold Medals** for outstanding performances:

**B. Stat. (Hons.):** Sagnik Nandy

**M. Stat.:** Debarghya Mukherjee

**M. Tech. (QROR):** Subham Roy


Rajarshi Bhattacharjee


Shubhodip Mondal

**Mukul Chaudhuri Memorial Prize for** the best female student in B. Stat. (Hons.) first year batch (2016-2017):

Debolina Paul

**Mukul Chaudhuri Memorial Prize for** the best female student in B. Stat. (Hons.) second year batch (2016-2017):

Disha Ghandwani


Sagnik Nandy


Sayan Das

Souvik Ray

Apratim Dey
Sagnik Nandy


Tejaswi Tripathi


Saikat Palit


Koushik K. Dey


Akshay Bansal

Dr. N.S. Iyenger Award for best student of Econometrics (2015-2017):

Manish Agarwal

Sanghamitra Das Memorial Gold Medal Award for outstanding performance in M. S. (Q.E.) Programme (2015-2017):

Manish Agarwal

Raja Rao Memorial Prize for outstanding research work (2017-2018):

Dr. Kiranmoy Chatterjee

M. N. Murthy Memorial Prize for outstanding research work (2017-2018):

Dr. Prajamitra Bhuyan

Haldane Memorial Prize for outstanding research work (2017-2018):

Dr. Abhik Ghosh

In addition to regular teaching duties in various academic programmes of the Institute, the faculty members of the Institute offered research courses in consultation with the research fellow advisory committees of respective divisions for the research fellows of the Institute.
Table – 1

Number of students passed the different courses during 2017 and number of existing students/fellows during 2017-2018.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Courses</th>
<th>1&lt;sup&gt;st&lt;/sup&gt; year</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; year</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt; year</th>
<th>In 2017</th>
<th>During the year 2017-18</th>
</tr>
</thead>
<tbody>
<tr>
<td>01.</td>
<td>B. Stat. (Hons./Pass) (Offered at Kolkata)</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; year</td>
<td>32</td>
<td>34</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; year</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; year</td>
<td>43</td>
<td>34</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt; year</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>32</td>
<td>45</td>
<td></td>
<td>33</td>
</tr>
<tr>
<td>02.</td>
<td>B. Math. (Hons./Pass) (Offered at Bangalore)</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; year</td>
<td>32</td>
<td>28</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; year</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; year</td>
<td>18</td>
<td>34</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt; year</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>20</td>
<td>33</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>03.</td>
<td>M. Math. (Offered at Kolkata &amp; Bangalore-in alternative year)</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; year</td>
<td>14</td>
<td>27</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; year</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; year</td>
<td>17</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>04.</td>
<td>M. Stat. (Offered at Kolkata, Delhi &amp; Chennai)</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; year</td>
<td>36&lt;sup&gt;###&lt;/sup&gt; = (19+8+9)</td>
<td>11</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; year</td>
<td>43&lt;sup&gt;###&lt;/sup&gt; = (19+12+12)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; year</td>
<td>32</td>
<td></td>
<td></td>
<td>36</td>
</tr>
<tr>
<td>05.</td>
<td>M.S. (QMS) (Offered at Bangalore)</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; year</td>
<td>11</td>
<td>13</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; year</td>
<td>11</td>
</tr>
<tr>
<td>06.</td>
<td>M.S. (QE) (Offered at Kolkata &amp; Delhi)</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; year</td>
<td>21</td>
<td>29</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; year</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; year</td>
<td>21</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>07.</td>
<td>M. Tech. (CS) (Offered at Kolkata)</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; year</td>
<td>40&lt;sup&gt;##&lt;/sup&gt; = (13+27)</td>
<td>17</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; year</td>
<td>41&lt;sup&gt;##&lt;/sup&gt; = (17+24)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; year</td>
<td>37&lt;sup&gt;##&lt;/sup&gt; = (15+22)</td>
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<tr>
<td>08.</td>
<td>M. Tech. (QROR) (Offered at Kolkata)</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; year</td>
<td>17</td>
<td>23</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; year</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; year</td>
<td>17</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>09.</td>
<td>M.S. (Library and Information Science)</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; year</td>
<td>10</td>
<td>17</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; year</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; year</td>
<td>07</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>10.</td>
<td>Post-Graduate Diploma in Statistical Methods and Analytics</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; year</td>
<td>15</td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Offered at North-East Centre, Tezpur)</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; year</td>
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<tr>
<td>11.</td>
<td>Post-Graduate Diploma in Computer Applications</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; year</td>
<td>04</td>
<td>07</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>(Offered at Giridih)</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; year</td>
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<tr>
<td>12.</td>
<td>Post Graduate Diploma in Business Analytics</td>
<td>1st Semester</td>
<td>52</td>
<td>53</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Junior &amp; Senior Research Fellows in different disciplines</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; year</td>
<td>16</td>
<td>204***</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; year</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>(Offered at Kolkata, Delhi, Bangalore, Chennai &amp; Hyderabad)</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; year</td>
<td></td>
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<td></td>
<td></td>
<td>52</td>
<td>53</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>16</td>
<td>204***</td>
<td></td>
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</tr>
</tbody>
</table>

Grand Total 541 818

☼ One student repeating a year, ☼☼ Two students repeating a year, ☼☼☼ Three students repeating a year
ৎ One student in exchange programme,
# Total number including Kolkata and Delhi,
## Total number including Kolkata, Delhi and Chennai,
*** JRF & SRF at Kolkata
<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Fellow</th>
<th>Title of the Thesis</th>
<th>Subject</th>
<th>University / Institute</th>
<th>Name of the Supervisor(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Arnab Mandal</td>
<td>Quantum Isometry Groups of Dual of Finitely Generated Discrete Groups and Quantum Groups.</td>
<td>Mathematics</td>
<td>ISI</td>
<td>Prof. Debashish Goswami, SMU, ISI, Kolkata</td>
</tr>
<tr>
<td></td>
<td>M. Sc. (Mathematics) (University of Calcutta)</td>
<td></td>
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<tr>
<td>2.</td>
<td>Ayan Bhattacharya</td>
<td>Heavy-Tailed Random Field from Statistical and Probabilistic Perspective: branching walks and stable fields.</td>
<td>Statistics</td>
<td>ISI</td>
<td>Dr. Parthanil Roy, SMU, ISI, Bangalore</td>
</tr>
<tr>
<td></td>
<td>M. Sc. (Statistics) (IIT Kanpur)</td>
<td></td>
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<tr>
<td></td>
<td>M. Sc. (Statistics) (Indian Statistical Institute)</td>
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<tr>
<td>4.</td>
<td>Prasenjit Ghosh</td>
<td>Some Theoretical and Methodological Aspects of Simultaneous Inference with Special Emphasis on High Dimensional Problems under Sparsity.</td>
<td>Statistics</td>
<td>ISI</td>
<td>Dr. Arijit Chakrabarti, ASU, ISI, Kolkata</td>
</tr>
<tr>
<td></td>
<td>M. Sc. (Statistics) (IIT Kanpur)</td>
<td></td>
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<tr>
<td>5.</td>
<td>Kaushik Jana</td>
<td>Statistical Models and Methods for Some Environmental Problems</td>
<td>Statistics</td>
<td>ISI</td>
<td>Prof. Debasis Sengupta, ASU, ISI, Kolkata</td>
</tr>
<tr>
<td></td>
<td>M. Sc. (Statistics) (University of Kalyani)</td>
<td></td>
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<tr>
<td>6.</td>
<td>Jayant Jha</td>
<td>Regression on a Unit Sphere.</td>
<td>Statistics</td>
<td>ISI</td>
<td>Prof. Atanu Biswas, ASU, ISI, Kolkata</td>
</tr>
<tr>
<td></td>
<td>M. Sc. (Statistics) (IIT Kanpur)</td>
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</tr>
<tr>
<td></td>
<td>M. Sc. (Economics) (University of Calcutta)</td>
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</tr>
</tbody>
</table>

Table 2

Ph. D degree awarded by the Institute in the 52nd Convocation held on 09.01.2018
<table>
<thead>
<tr>
<th></th>
<th>Name</th>
<th>Qualification</th>
<th>Title</th>
<th>Field</th>
<th>Institution</th>
<th>Supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Parikshit De</td>
<td>M. Sc. (Economics)</td>
<td>Mechanism Design In Sequencing Problems.</td>
<td>Quantitative Economics</td>
<td>ISI</td>
<td>Prof. Manipushpak Mitra, ERU, ISI, Kolkata</td>
</tr>
<tr>
<td></td>
<td>M. Sc. (Economics) (University of Calcutta)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>M. A. (Economics) (Jadavpur University)</td>
<td></td>
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</tr>
<tr>
<td>10</td>
<td>Abhirup Banerjee</td>
<td>M. Stat. (Computer Science)</td>
<td>Rough Sets and Probabilistic Models for Segmentation and Bias Field Correction in Brain MR Images.</td>
<td>Computer Science</td>
<td>ISI</td>
<td>Dr. Pradipta Maji, MIU, ISI, Kolkata</td>
</tr>
<tr>
<td></td>
<td>M. Stat. (Computer Science) (Indian Statistical Institute)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>M. A. (Economics) (Jadavpur University)</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Sukanta Bhattacharjee</td>
<td>M. Tech. (Computer Science)</td>
<td>Algorithms for bioequivalence and probabilistic models for microfluidic lab-on-chip.</td>
<td>Computer Science</td>
<td>ISI</td>
<td>Dr. Pradipta Maji, MIU, ISI, Kolkata</td>
</tr>
<tr>
<td></td>
<td>M. Tech. (Computer Science) (Indian Statistical Institute)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Apurbalal Senapati</td>
<td>M. Tech. (Computer Science)</td>
<td>Pronominal Anaphora Resolution in Bengali.</td>
<td>Computer Science</td>
<td>ISI</td>
<td>Dr. Pradipta Maji, MIU, ISI, Kolkata</td>
</tr>
<tr>
<td></td>
<td>M. Tech. (Computer Science) (Indian Statistical Institute)</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>M. Tech. (Computer Science) (Indian Statistical Institute)</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>15</td>
<td>Partha Garai</td>
<td>M. Tech. (Information Technology)</td>
<td>Development of Some Scalable Pattern Recognition Algorithms for Real Life Data Analysis.</td>
<td>Computer Science</td>
<td>ISI</td>
<td>Dr. Pradipta Maji, MIU, ISI, Kolkata</td>
</tr>
<tr>
<td></td>
<td>M. Tech. (Information Technology) (West Bengal University of Technology, Kolkata)</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
### Table 3

**Research Fellows who have been awarded Ph. D degree by Academic Bodies other than ISI during 2017 for work done in the ISI**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Fellow</th>
<th>Title of the Thesis</th>
<th>University</th>
<th>Name of the Supervisor (s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Pranav Chand Rayabarapu</td>
<td>Identification of susceptible genetic polymorphisms associated with Coronary Heart Disease in the South Indian Population.</td>
<td>Osmania University</td>
<td>Prof. B.M. Reddy, BAU, ISI, Hyderabad</td>
</tr>
<tr>
<td>2.</td>
<td>Avatharam Ganivada</td>
<td>Fuzzy Rough Granular Neural Networks for Pattern Recognition and Mining.</td>
<td>University of Calcutta</td>
<td>Dr. Shubhra Sankar Ray, MIU, ISI, Kolkata</td>
</tr>
<tr>
<td>4.</td>
<td>Nanda Dulal Jana</td>
<td>Protein Structure Prediction using Metaheuristic Algorithms: A Perspective from Fitness Landscape Analysis.</td>
<td>Indian Institute of Engineering Science and Technology (IIEST), Shibpur</td>
<td>Prof. Jaya Sil, Dept. of Comp. Sc. and Engg., IIEST and Dr. Swagatam Das, ECSU, ISI, Kolkata</td>
</tr>
<tr>
<td>5.</td>
<td>Saiyed Umer</td>
<td>Design and Development of Biometric Recognition System using Multi-Instance Iris Images.</td>
<td>Jadavpur University</td>
<td>Dr. Bibhas Chandra Dhara, Department of IT, Jadavpur University and Prof. Bhabatosh Chanda, ECSU, ISI, Kolkata</td>
</tr>
<tr>
<td>6.</td>
<td>Achyut Kumar Banerjee</td>
<td>Investigations on The Invasiveness of Mikania micrantha Kunth (Asteraceae) With Respect to its Spread and Distribution in Greater Kolkata.</td>
<td>University of Calcutta</td>
<td>Prof. Anjana Dewanji, AERU, ISI, Kolkata</td>
</tr>
<tr>
<td>No.</td>
<td>Name</td>
<td>Title</td>
<td>Institution</td>
<td>Faculty Members</td>
</tr>
<tr>
<td>-----</td>
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<td>----------------------------------------------------------------------</td>
<td>------------------------</td>
<td>------------------------------------------------------</td>
</tr>
<tr>
<td>7.</td>
<td>Kaushik Sarkar</td>
<td>Turbulent Flow Characteristics &amp; its Effects on Sedimentations and Process Around Submerged Objects</td>
<td>Jadavpur University</td>
<td>Prof. B.S. Muzumder (Retired), and Prof. Subir Ghosh, PAMU, ISI, Kolkata</td>
</tr>
<tr>
<td>9.</td>
<td>Abhijit Das</td>
<td>Towards Multimodal Sclera and Iris Biometrics Recognition with Adaptive Liveness Detection.</td>
<td>Griffith University</td>
<td>Prof. Michael Blumenstein, Griffith University, Australia and Prof. Umapada Pal, CVPRU, ISI, Kolkata</td>
</tr>
<tr>
<td>10.</td>
<td>Arundhati Tarafdar</td>
<td>Words Spotting from Multilingual and Stylistic Documents.</td>
<td>PolyTech Tours, Université François-Rabelais, Tours, France</td>
<td>Prof. Jean-Yves Ramel, Dr. Nicolas Ragot, Laboratoire d'Informatique, PolyTech Tours, Université François-Rabelais, Tours, France and Prof. Umapada Pal, CVPRU, ISI, Kolkata</td>
</tr>
<tr>
<td>11.</td>
<td>Nilamadhabha Tripathy</td>
<td>On the Development of an Optical Character Recognition (OCR) System for Complex Indian Documents.</td>
<td>Jadavpur University</td>
<td>Prof. Umapada Pal, CVPRU, ISI, Kolkata and Prof. Mita Nasipuri, Dept. of Computer Science and Engineering, Jadavpur University, Kolkata, India</td>
</tr>
<tr>
<td>12.</td>
<td>Dipasree Pal</td>
<td>Some Studies on Improving Automatic Query Expansion.</td>
<td>Jadavpur University</td>
<td>Dr. Mandar Mitra, CVPRU, ISI, Kolkata and Dr. Samar Bhattacharyya, School of Education Technology, Jadavpur University</td>
</tr>
</tbody>
</table>
Number of candidates who were awarded degrees in the 52nd Convocation of the Institute held on 9th January, 2018

<table>
<thead>
<tr>
<th>Degree /Diploma</th>
<th>Number of candidates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctor of Philosophy (Ph.D.)</td>
<td>28*</td>
</tr>
<tr>
<td>Master of Technology (M. Tech.) in Computer Science</td>
<td>21</td>
</tr>
<tr>
<td>Master of Technology (M. Tech.) in Quality, Reliability and Operations Research</td>
<td>17</td>
</tr>
<tr>
<td>Master of Statistics (M. Stat.)</td>
<td>32</td>
</tr>
<tr>
<td>Master of Mathematics (M. Math.)</td>
<td>17</td>
</tr>
<tr>
<td>Master of Science (M. S.) in Quantitative Economics</td>
<td>37</td>
</tr>
<tr>
<td>Master of Science (M. S.) in Library and Information Science</td>
<td>07</td>
</tr>
<tr>
<td>Master of Science (M. S.) in Quality Management Science</td>
<td>11</td>
</tr>
<tr>
<td>Bachelor of Statistics (Honours) [B. Stat. (Hons.)]</td>
<td>18</td>
</tr>
<tr>
<td>Bachelor of Mathematics (Honours) [B. Math. (Hons.)]</td>
<td>19</td>
</tr>
<tr>
<td>Bachelor of Mathematics (B. Math.)</td>
<td>01</td>
</tr>
<tr>
<td>Post-Graduate Diploma in Statistical Methods and Analytics</td>
<td>15</td>
</tr>
<tr>
<td>Post-Graduate Diploma in Computer Applications</td>
<td>04</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>227</strong></td>
</tr>
</tbody>
</table>

* (Including those who worked in the Institute but were awarded Ph.D. degree by other academic bodies.)
The International Statistical Education Centre (ISEC) was founded in 1950 at the initiative of Professor P.C. Mahalanobis. The Centre opened at Kolkata through an agreement between the International Statistical Institute and the Indian Statistical Institute (ISI). At present, the Centre is run by the Indian Statistical Institute under the auspices of the Government of India. The Centre functions under a joint Board of Directors. In its history of more than 60 years, Prof. P.C. Mahalanobis was the Chairman of the Board of Directors since the inception of the Centre in 1950 until his death in 1972. Since then, Professor C.R. Rao had been the Chairman of the Board till 2015. Currently, Prof. S.P. Mukherjee is the Chairman of the Board.

The Centre aims to provide training in theoretical and applied statistics at various levels to selected participants from countries of the Middle East, the South and the South-East Asia, the Far-East and the commonwealth countries of Africa. The primary training programme is a 10-month regular course in Statistics leading to a Statistical Training Diploma. In addition, special courses on different topics of varying duration are also organized.

The commencement date of the 71st Term of the ISEC Regular Course (2017-2018) was August 1, 2017. There were 25 trainees from eleven countries, namely, (1) Bhutan, (2) Cambodia, (3) Fiji, (4) Mongolia, (5) Myanmar, (6) Nepal, (7) Nigeria, (8) South Africa, (9) South Sudan, (10) Sri Lanka, (11) Tanzania. Nineteen trainees were supported by fellowships under the Indian Technical and Economic Co-operation (ITEC) / Special Commonwealth African Assistance Plan (SCAAP) of the Government of India while three were supported by the TCS Colombo Plan. They will be awarded the Statistical Training Diploma in the Convocation, scheduled on May 31, 2018.

The ISEC in its totality has shifted now to the first floor in a new building, named Deshmukh Bhavan, at 202, B.T. Road, Kolkata 700108, and has four class rooms, one computer laboratory, one library and a number of rooms for the Member-Secretary, the Programme Coordinator and the faculty members with all modern amenities including scope for interactive presentations. Professor Sanghamitra Bandyopadhyay, Director, ISI has taken special interest in enhancing the international image of the ISEC courses and its infrastructure. The trainees have been provided with computer facilities and internet connections in the Computer Laboratory and in the ISEC hostel. They also have access to the books at the ISI library. Teachers at the headquarter of the Indian Statistical Institute and officers of the Government of India at the National Statistical Systems Training Academy, the National Sample Survey Office and various ministries have been participating in teaching the Regular Course throughout the years (including the current year). Till now, about 1653 trainees from 84 countries have received the Statistical Training Diploma.
2. RESEARCH AND OTHER SCIENTIFIC ACTIVITIES

The major thrust of the Institute is on research in various disciplines comprising Theoretical and Applied Statistics, Mathematics, Computer Sciences, Biological Sciences, Economics and other Social Sciences, Physics and Earth Sciences, Statistical Quality Control and Operations Research, and Library and Information Sciences. Scientists of the Institute carry out independent research in their own basic discipline and also undertake interdisciplinary research in collaboration with other units within the Institute and also with outside organizations. The Institute also takes up various internally and externally funded projects in diverse fields on challenging live problems of national and international importance. As a part of research activities, scientists of the Institute are involved in consultancy work as well. This section gives a brief account of the principal areas of work, over the past year, of the scientific divisions of the Institute, namely, the Divisions of:

- Theoretical Statistics and Mathematics
- Applied Statistics
- Computer and Communication Sciences
- Physics and Earth Sciences
- Biological Sciences
- Social Sciences
- Statistical Quality Control and Operations Research
- Library, Documentation and Information Sciences

In addition, there is a report each from the ‘Center for Soft Computing Research: A National Facility’ and the ‘Computer and Statistical Services Centre’.

Theoretical Statistics and Mathematics Division

The Theoretical and Mathematics Division, which presently has units in Kolkata, Delhi, Bangalore and Chennai, continued its activities in the areas of Research, Teaching, conducting Workshops, International conferences and project related activities.

Some of the main thrust areas of research of the Division during this period are:

- Bootstrap in dependent and high-dimensional models, econometrics, environmetrics, data depth, inference in high dimensional statistical models, life testing reliability, associated random variables, nonparametric inference, parametric and nonparametric Bayesian inference, statistical graphics, statistical signal processing.

- Algebra, algebraic Geometry, commutative Algebra, complex analysis, functional Analysis, geometry and topology, Gromov-Haussdorf vague topology, harmonic analysis, linear algebra, non-commutative geometry, number theory, operator algebra, operator theory, quantum Groups,

- Drainage networks and Brownian wave, financial mathematics, free probability, Gaussian free fields, large deviation, large dimensional random matrices, percolation, point processes, random complexes, random graphs, random walks on trees, random walk in random environment, urn models.

- Colleagues also continued collaborative research under internal and externally funded projects with funding from prestigious organizations like Fulbright Academic Excellence Fellowship, Indo-Israel projects, JC Bose Fellowship, Marie Curie Research Staff Exchange, Microsoft Research, Hitachi.

- Publications by the Division include over 150 papers in reputed international and national journals and colleagues also contributed editorial activities of monographs and journals.
Research Activities

Recognition bestowed on our colleagues during this period included Associateship of the Academy of Science, BM Birla Science prize, Fellowship of Indian Academy of Sciences, Hans Schneider Prize, Infosys Prize, JC Bose Fellowship, Young researcher awards,

The Division conducted several national and international conferences. The flagship lectures PC Mahalanobis Memorial Lecture and the Ashok Maitra Memorial lectures were delivered by Professor IM Johnstone and Professor Mathew Penrose. Professor S.R.S. Varadhan gave a mini course on Random Graphs.

Stat-Math Unit, Kolkata

Commutative Algebra:
- Study of $A^3$-forms over a field $k$ of characteristic zero
- Triviality of any $A^2$-form over any one-dimensional Noetherian domain containing the field of rational numbers
  
  Dutta, Amartya Kumar, Gupta, Neena and Lahiri, Animesh

Geometry and Topology:
- Study of rigidity problems for CAT (-1) spaces
- Study of harmonic analysis on simply connected, negatively curved harmonic manifolds
  
  Biswas, Kingshook

- Nambu structure on Lie algebroid, its associated bialgebroid and obtained some applications
  
  Mukherjee, Goutam, Basu, Samik, Das, Apurba and Basu Somnath

- Introduced deformations of algebraic structures under the presence of finite group actions
  
  Goutam Mukherjee and Yadav, Raj B.

Stat-Math Unit, Delhi

“Power of Two Choices” in Negatively Reinforced Pólya Urn. In this work, we consider an implementation strategy for weighted negative reinforcement in Pólya Urn scheme

Bandyopadhyay, Antar and Kaur, Gursharn

A study of modified Branching Random Walk model

Bandyopadhyay, Antar and Ghosh, Partha Pratim

GMM estimation using incomplete covariates, Group testing, Pseudo-likelihood theory, High-dimensional estimation

Chatterjee, Arindam

A study of the irreducibility of a general family of classical orthogonal polynomials, particularly Hermite-Laguerre polynomials and Generalized Laguerre polynomials and their associated Galois groups

Laishram, Shanta, Nair, S., Shorey, T.N., Jindal, A. and Sharma R.

A study of irreducibility of Laguerre polynomials $L^{(q)}(x)$ and $L^{(q)}(x^d)$ with $q$ in \{±1/3, ±2/3, ±1/4, ±3/4\}, where $d$ is the denominator of $q$

Laishram, Shanta and Shorey, T.N.
Research Activities

Laishram, Shanta

Worked on exponential diophantine equations

Laishram, Shanta, Das, P. and Saradha, N.

Worked on finding rational points on a Variations of Erdős-Selfridge superelliptic curves which appeared in Mathematika

Laishram, Shanta, Das, P. and Saradha, N.

Worked on the problem of existence of infinitely many positive integers who sum of digits in different bases are close enough

Laishram, Shanta, Deshouillers, J.M., Habsieger, L., and Landreau, Bernard

Proved some general results on perfect powers in products of terms of arithmetic progressions

Laishram, Shanta, Ngairangbam, S. and Singh, M.R.

Worked on Perfect powers in products of polynomials

Laishram, Shanta and Dey, Pallab Kant

Working on chirp signal model when variance may not exist and error random variables is from a symmetric stable distribution

Nandi, Swagata and Kundu, Debasis

Working on random amplitude chirp signal model. Studying the theoretical properties of an estimator

Nandi, Swagata and Kundu, Debasis

Working on multichannel sinusoidal signal

Nandi, Swagata and Kundu, Debasis

Working on chirp signal model when a linear trend is present

Nandi, Swagata

Stat-Math Unit, Bangalore


Athreya, Siva

Bures distance and representation metric:
- The notion Bures distance, originally defined for states has been extended to completely positive maps.

Bhat, B.V. Rajarama, John, Tiju Cherian and Srinivasan, R.

Infinite mode Gaussian States:
- Extension of a convexity and symmetry results of Prof. K R Parthasarthy for finite mode Gaussian states to that of infinite mode Gaussian states.

Existence of Joint distributions:
- To explore conditions under which bivariate distributions ensure existence of joint distributions.

Bhat, B.V. Rajarama and Kumar, Vijaya

Bayesian approach to abundance and density estimation in ecological studies

Delampady, Mohan, Dey, Soumen and Gopalaswamy, Arjun
Research Activities

Study of estimates on the greatest prime factor of product of consecutive positive integers and more generally, of consecutive terms in arithmetic progressions dating back to Sylvester in 1892

Nair, Saranya G. (NBHM Post-doc)

Study of Lie groups admitting hyperbolic automorphisms

Raja, C.R.E. and Choudhary, M. (NBHM Post-doc)

Connections between stochastic differential equations and stochastic partial differential equations have been studied. Chaos expansions form the framework in which some foundational results in stochastic analysis have been proved. Chaos expansions for continuous martingales have been studied.

Rajeev, B., Bhar, Suprio, Sarkar, Barun and Tappe, Stefan

Study of Homotopy inertia groups:

- For quaternionic projective space, we proved that the concordance inertia group is trivial in dimension 20, but there are many examples in high dimensions where the concordance inertia group is non-trivial.

- Following the results from the past research, planned to determine the group structure of the inertia group $I(\mathbb{C}P^n \times S^1)$ of the product $\mathbb{C}P^n \times S^1$.

- In particular, interested to know whether the kervaire sphere in dimension $4n + 1$ lies in the inertia group $I(\mathbb{C}P^{2n} \times S^1)$? (Already the case $n = 1$ would be good).

- For the product $\mathbb{C}P^n \times S^1$, Brumfiel (1971) showed that the inertia group coincides with the homotopy inertia group by using the fact that every homotopy self-equivalence of $\mathbb{C}P^n \times S^1$ is homotopic to a diffeomorphism.

- Computing the inertia groups of $\mathbb{C}P^n \times S^1$ have some interesting applications to symplectic topology.

- A direct consequence of a main result of Kreck’s modified surgery theory (1999) is that the connected sum $M \# \Sigma$ of a closed simply connected manifold $M$ of dimension $2m \geq 4$ with a homotopy sphere $\Sigma$ is diffeomorphic to $M$ provided $\Sigma$ represents zero in a suitable bordism group $\Omega_{2m}^B$.

- To classify all simply connected 8-manifolds and their geometric structures using Kreck’s modified surgery theory and inertia groups via $B$-Bordism theory.

- To study how complex and symplectic structure on a smooth manifold depends on the smooth structure.

Ramesh Kasilingam (INSPIRE Faculty)

Broad Topic of research: Operator theory and function theory

- Representations of contractively embedded invariant subspaces in several variables (following L. de Branges)

- Concrete representations and characterizations of a large class of commuting $n$-tuples of isometries

- A complete characterization of invariant subspaces of the Hardy space over the unit polydisc. Also this yields an analytic description of a large class of $n$-tuples of commuting isometries
Research Activities

- The dichotomy of isometric dilations and von Neumann inequality for $n$-tuples, $n$ larger than 2, with definite results has been pointed out
- A detailed analysis with concrete representations, with applications to invariant subspace problem, of Berger-Coburn-Lebow pairs of isometries
- Similarity and quasi-similarity of Cowen-Douglas class. This also relates the derivatives of sections, curvatures and corona problem in one variable
  
  Sarkar, Jaydeb

The problem of finding exact eigenvalue distribution of random symmetric Gaussian Toeplitz matrix is still open. Investigating this particular random matrix model so as to derive the limiting spectral distribution of random symmetric Toeplitz matrices.
  
  Reddy, Nanda Kishore (INSPIRE Faculty)

Study of central limit theorem for exponentially quasi-local statistics of spin models on Cayley graphs
  
  Yogeshwaran, D., Vadlamani, Sreekar and Reddy, Tulasi Ram

Sub-tree counts on hyperbolic random geometric graphs:
- A study of asymptotics (expectation, variance and central limit theorem) for sub-tree counts (isomorphic copies of a fixed tree in the graph) in hyperbolic random geometric graphs for all $d \geq 2$.
  
  Yogeshwaran, D. and Owada, Takashi

Applied Statistics Division

The Applied Statistics Division came into being in September 1996 in place of the Applied Statistics, Survey and Computing Division. The Computer Science Unit was renamed as the Applied Statistics Unit and the Biometry Unit was transferred to the Biological Science Division. Till 2005-2006, the Applied Statistics Division consisted solely of the Applied Statistics Unit. In 2006, a new unit, namely, the Bayesian and Interdisciplinary Research Unit was created within this Division. Later in 2012, two more units named Applied and Official Statistics unit, North East centre, Tezpur and Applied Statistics Unit, Chennai became parts of this Division. In October 2014 Bayesian and Interdisciplinary Research Unit of this Division was renamed Interdisciplinary Statistical Research Unit.

The main activities of the Division include teaching, training, research and PhD guidance, projects and consultancy, academic administration, editorial work, etc., along with many others miscellaneous duties. All the members of the Division take active part in teaching in the degree and diploma courses of the institute. They also take part in ISEC and other short-term courses. The members of the Division regularly conduct North East workshops and Winter/ Summer schools and training programs on topics of general interest for users of Statistics, including researchers/ teachers, ISS officers and probationers, summer interns, high school students, officials from government and other agencies, etc. The Statistical Trainee programme for fresh MSc (Statistics) students is a unique training programme in which the trainees get hands-on experience with application-oriented research and projects and eventually assist the faculty members.

The research activities of the scientists of the Division have a wide focus. The topics of interest include Sample Surveys, Design of Experiments/ Optimal Designs, Statistical Inference/ Robust Inference, Bayesian Methods/ Decision Theory, Large Sample Theory/ Asymptotic Theory, Multivariate Analysis, Directional Data Analysis, Time Series Analysis, Reliability/ Survival Analysis/ Actuarial Statistics, Epidemiology/ Clinical Trials, Environmental Statistics, Demography/ Population Studies, Image Processing/ Pattern and Speech Recognition/ Neural Networks, Classification of Multivariate data,
Research Activities


Applied Statistics Unit, Kolkata

- **Reliability:**
  Based on a NHPP model for error occurrence, adapted to periodic debugging data, a method for estimating the reliability of a software has been developed

- **Survival Analysis:**
  Work on parametric analysis of misclassified right censored survival data including temporal misclassification and type misclassification as well, with application to estimation of adverse drug reaction risk

- **Design of Experiments:**
  Optimal allocation of units with fixed covariate values into two or more treatment groups has been investigated in the context of generalized linear models (GLM) and incorporating the issue of robustness and balance.

- **Social Mobility:**
  An axiomatic approach to define social mobility is being attempted with related statistical issues and an application

- **Screening Studies:**
  The problem of finding an optimal screening age for Barrett’s Esophagus (BE) in the pathway to Esophageal Adenocarcinoma (EAC) has been addressed and a solution based on a multistage clonal expansion model for EAC development has been found

  Dewanji, Anup

Asymptotic optimality of one group shrinkage priors in high dimensional problems:
Multiple hypothesis testing under dependence

  Chakrabarti, Arijit

Computational Genomics:
Understanding the classification of various protein families has been directed to MIPS protein leading a new method for the clustering diverse protein sequences applied to Drosophila olfactory report sequences

  Pal Chaudhury, Pabitra

Interdisciplinary Statistical Research Unit, Kolkata

- **Robust Analysis of Censored Data**

- **Weighted Likelihood Estimation**

- **Selection of Optimal Tuning Parameters in Robust Estimation**

- **Robust Bayes Estimation**

  Basu, Ayanendranath

A-optimal and Highly A-efficient Treatment Control Design in the Presence of Covariates

  SahaRay, Rita and Dutta, Ganesh
Research Activities

Multi-label Classification
Bose, Smarajit, Chakraborty, Saptarshi

- Multiple Hypotheses Testing in Dependant setup
- Statistical Classification Using Voronoi diagram
  Bhandari, Subir Kumar

- The Asymptotic Theory, Both Classical and Bayesian for Systems of Stochastic Differential Equations with Random Effects Distributed as Gaussian Mixtures

- The Asymptotic Theory for Both Classical and Bayesian Paradigms, for Both Fixed and Random Effects Set-ups for Systems of Stochastic Differential Equations by Incorporating Time-varying Covariates in the System

- A Novel State Space Model Based on Stochastic Differential Equations and the Asymptotic Theory for Both Classical and Bayesian Inference
  Maitra, Trisha and Bhattacharya, Sourabh

Bayesian Theory for Investigation of Convergence, Divergence and Oscillation of Infinite Series
Roy, Sucharita and Bhattacharya, Sourabh

- Performance of a Novel Bayesian Multiple Testing Procedure for the Dependent Set-up

- Asymptotic Properties of A Novel and General Bayesian Multiple Comparison Method Such That the Decision on Any Hypothesis Depends upon the Joint Posterior Probability of the Hypotheses on Which the Current Hypothesis Is Strongly Dependent
  Noirrit Kiran Chandra and Bhattacharya, Sourabh


- Nonparametric Bayesian Model for Case-control Genotype Data using Hierarchies of Dirichlet Processes
  Bhattacharya, Durba and Bhattacharya, Sourabh

Applied Statistics Unit, Chennai

Jackknife Empirical Likelihood-based Inference for Sen Poverty Index
Sudheesh, K.K. and Sreelakshmi, N.

On the Mean Time to Failure of an Age-replacement Model in Discrete Time
Sudheesh, K.K. and Asha, G.

Jackknife Empirical Likelihood Based Inference for Probability Weighted Moments
Sudheesh, K.K., Deepesh, Bhati and Sreelakshmi, N.

Applied and Official Statistics Unit, North-East Centre, Tezpur

Study on psychosocial work characteristics and health (mainly depression and work stress) with applications of advanced statistical methods e.g. mixed models, structural equation models, autoregressive models, multilevel models
Chungkham, Holendro Singh, Westerlund, Hugo, Head, Jenny and Hanson, Linda Magnusson
Research Activities

A Study on the Implications for Lexicographic Preferences of Behavioural Traits of People which Are Naive
Goswami, Mridu Prabal, Mitra, Manipushpak (ERU, Kolkata) and Sen, Debapriya

Negative Externalities Due to Private Consumption and its Implications for Market Failure
Goswami, Mridu Prabal, Mitra, Manipushpak (ERU, Kolkata) and Sarkar, Soumendu

An Alternative Explanation of Standard Dictatorial and Ultimatum Games Based on Outcomes Instead of Intrinsic Normative Concerns
Goswami, Mridu Prabal, Ghosh, Sanmitra and Sarkar, Shubhro

Change Detection around Kaziranga National Park, Crop Health Monitoring around Tezpur, Applications of Deep Learning in Medical Imaging
Maitra, Sanjit

Analysis of Atmospheric Particulate Matter Removal Using Satellite Imagery Derived Vegetative Cover
Maitra, Sanjit and Jyethi, Darpa Saurav

Retrieval of Historic Atmospheric Black Carbon Concentration in the Arctic Region and North America
Jyethi, Darpa Saurav, Liaquat Husain and Vincent Dutkiewicz

Profile Analysis of Polycyclic Aromatic Hydrocarbons (PAHs) in Environmental Matrices
Darpa Saurav Jyethi and P.S. Khillare

Carbon Foot-printing of the Indian Tea Industry
Jyethi, Darpa Saurav and Pandey, Divya

Morphological and Chemical Characterisation Dtudy of Dust
Jyethi, Darpa Saurav

- Systematic Review and Meta-analysis of RCTs on Maternal and Child Nutrition
- A Meta-analysis Combining Parallel and Cross-over Randomized Controlled Trials to Assess Impact of Fortified Foods on Serum Levels of Concentration among Children and Infants
- Current Nutritional Status of under Five year Children in India: a Retrospective Study
  Athe, Ramesh

Computer and Communication Sciences Division

Over the years, the Computer and Communication Sciences Division (CCSD) at ISI has grown to eight units spread over four centres:

- Advanced Computing and Microelectronics Unit, Kolkata
- Computer Vision and Pattern Recognition Unit, Kolkata
- Electronics and Communication Sciences Unit, Kolkata
- Machine Intelligence Unit, Kolkata
CCSD counts amongst its faculty a number of highly decorated scientists, as well as fellows of various prestigious national and international academies and societies. The various activities undertaken by the staff of this division are summarised in the following pages under the heads of teaching, research, externally and internally funded project work, workshops and conferences conducted, editorial work, etc.

**Advanced Computing and Microelectronics Unit, Kolkata**

The research activities in the Advanced Computing and Microelectronics Unit (ACMU) comprise theoretical and applied research in the areas of high performance computing, pervasive and mobile computing, wireless networks, cognitive radio, electronic design automation and testing for nanotechnology and giga-scale integration, embedded systems, system-on-a-chip, intellectual property protection of electronic design, low-power architectures, computational geometry, algorithms, computational biology, and hardware for image processing. The contributions of the faculty members have received world-wide acclaim as evident from their research profiles and publications in archival journals. Here follows a brief account of ongoing research projects and activities of this unit.

A brief report on each of these projects is presented below.

**Holy Grail of Error-Resilient Bio-Assay on a Lab-on-a-Chip (HERBAL)**

Bhattacharya, Bhargab B.

**Massive Data Algorithms**

Nandy, Subhas C.

- **GP-GPU Computing for Large Scale Networks**
- **Cellular Spectrum Sharing by Cognitive Radio for Ad Hoc Networks**

Das, Nabanita

**A Framework for Collaborative Application Execution for Mobile Cloud Computing**

Banerjee, Ansuman

- **Logic Synthesis for Quantum Computing (QCS)**
- **Algorithms for Design Automation in Next Generation Technologies**

Sur-Kolay, Susmita

**Efficient Vertical Handover Techniques in Heterogeneous Wireless Networks**

Ghosh, Sasthi C.

**The Cops and Robber Game on Graphs**

Das, Sandip

**Algorithms and Bounds for Dominating Set, Geodetic Set and Obstacle Number in Graphs**

Bishnu, Arijit, Ghosh, Arijit and Paul, Subhabrata

**Geometric Optimization Problems**

Roy, Sasanka
A Search Engine for Historical Events

Datta, Suchana and Majumdar, Debapriyo

Stroke Order Normalization for Online Text Recognition

Bhattacharya, Nilanjana, Pal, Umapada and Roy, Partha Pratim

Caption and Scene Text Classification

Roy, Sangheeta, Shivakumara, Palaiiahnakote, Pal, Umapada, Lu, Tong Wahab, and Ainuddin Wahid Bin Abdul

Printer Identification towards Forgery Detection

Wang, Zhen, Shivakumara, Palaiiahnakote, Lu, Tong, Basavanna, Mahadevappa, Pal, Umapada and Blumenstein, Michael

Video Text Detection

Sain, Aneeshan, Bhunia, Ayan Kumar, Roy, Partha Pratim and Pal, Umapada

Degraded Quality Printed Document Recognition

Biswas, Chandan, Mukherjee, Partha Sarathi, Ghosh, Koyel, Bhattacharya, Ujjwal and Parui, Swapan K.

Generation of Synthetic Training Samples for Online Handwriting Recognition

Bhattacharya, Ujjwal, Plamondon, Rejean, Dutta Chowdhury, Souvik, Goyal, Pankaj and Parui, Swapan K.

End to End Online Handwriting Recognition

Mukherjee, Partha Sarathi, Bhattacharya, Ujjwal, Parui, Swapan K. and Chakraborty, Bappaditya

Offline Devanagari Handwriting Recognition

Chakraborty, Bappaditya, Shaw, Bikash, Aich, Jayanta, Bhattacharya, Ujjwal and Parui, Swapan K.

Offline Handwritten Malayalam Word Recognition

P J, Jino, Balakrishnan, Kannan and Bhattacharya, Ujjwal

Human Computer Interaction

Saini, Rajkumar, Roy, Partha Pratim and Pal, Umapada

Human Face Detection

Chowdhury, Sanjoy, Mukherjee, Parthasarathi and Bhattacharya, Ujjwal

Biometrics

Das, Abhijit, Pal, Umapada, Ballester, Miguel Angel Ferrer and Blumenstein, Michael

Video quality assessment

Sanyal, Shreyan, Nandi, Sushmita and Palit, Sarbani

Musical Instrument Recognition

Banerjee, Anushka, Ghosh, Alekhya, Palit, Sarbani and Ballester, Miguel Angel Ferrer
Deep learning in Psoriasis Image Analysis
Pal, Anabik, Chaturvedi, Akshay, Garain, Utpal, Chatterjee, Raghunath, Chandra, Aditi and Senapati, Swapan

Deep Learning for Language Processing
Chakabarty, Abhisek, Pal, Anabik, Chaturvedi, Akshay, Das, Arjun, Pandit, Onkar, Ganguly, Debasis, and Garain, Utpal

Information Retrieval from Microblogs
Bandyopadhyay, Ayan, Ganguly, Debasis, Roy, Dwaiplayan, Roy, Riya and Mitra, Mandar

Word Embeddings in Information Retrieval
Roy, Dwaiplayan, Ganguly, Debasis, Bandyopadhyay, Ayan, Chowdhury, Amritap, Roy, Riya and Mitra, Mandar

Information Retrieval Evaluation
Bhattacharyya, Chiranjib, Majumder, Prasenjit, Roy, Dwaiplayan and Mitra, Mandar

Electronics and Communication Sciences Unit, Kolkata

Improved Random Forest
Mukherjee, D.P.

• Image Processing
• Image Analysis
Chanda, B.

• Statistical Properties of Machine Learning Algorithms
• Handling Data Irregularities in Machine Learning
Das, S.

• Event Recognition from unconstrained video
• Video Scene Classification
Mohanta, P.P.

Computational Intelligence
Pal, N.R.

• Object Tracking
• Common Sense Reasoning: Watson-Crick Automata
• DNA Computing
Ray, K.S.

Machine Intelligence Unit, Kolkata

Pattern Recognition
Late Murthy, C.A. and Chattopadhyay, S.

Machine Learning
Ghosh, A. and Maji, P.

Data Mining
Research Activities

Medical Imaging
Bandyopadyay, S., Mitra S., Ghosh, A. and Maji, P.

Biometry
Mitra, S.

- Precision Medicine
- Computational Systems Biology

De, R.K.

Bioinformatics
Bandyopadyay, S., De, R.K., Maji, P. and Ray, S.S.

Many-Objective Optimization
Bandyopadyay, S.

Machine Vision, Image Processing and Perception
Ghosh, K. and Bakshi, A.

Remote Sensing Image Analysis
Ghosh, K. and Neogi, S.

Rock thin section Image Analysis
Ghosh, K. and Das, R

**Documentation, Research and Training Centre, Bangalore**

The Documentation Research and Training Centre was established as an integral part of the Indian Statistical Institute in 1962. The primary objectives of DRTC are to promote research and training in the area of Library Science, Documentation and Information Science.

**Activities**

To achieve the objectives as mentioned above, the activities of DRTC have been grouped into:

a. Research Programme
b. Educational and Training programme
c. Continuing Education etc.

**Integrating Ontologies for Information Resources**
Biswa, Sudipta

**Formalizing concept for knowledge representation and facet discovery**
Chatterjee, Usashi

**Area of Ontology i.e. especially developing ontologies in the area of natural disaster to efficiently manage the crisis situation**
Sinha, Prashant Kumar

**Citation Database**
Sahoo, Subhranshu Bhusan
Research Activities

Linked data and Ontologies. He is reviewing the related literature of the stated area and also research data management

Bhoi, Narendra Kumar

Big Data, Data Curation, Data Repositories, Digital repositories, knowledge representation and management

Prasad, A.R.D

Knowledge organization, faceted systems and ontologies, open data and access to information, Knowledge management, open data infrastructures

Madalli, Devika P

Digital Library, Semantic Web, Social Network Analysis, Library Automation

Krishnamurthy, M

Semantic Web techniques and technologies, Knowledge Representation, Ontology, Metadata, Social network analysis

Dutta, Biswanath

Systems Science and Informatics Unit, Bangalore

Deep Learning Neural Networks, Granular Neural Networks, Pattern Recognition, Image Processing

Meher, Saroj K., Kothari, Neeta K. and Kumar, D. Arun

Visualizing Image Segmentation and Filtering Algorithms in Optimization Framework

Danda, Sravan, Najman, Laurent and Daya Sagar, B.S.

Morphological Interpolation

Challa, Aditya, Danda, Sravan, Najman, Laurent and Daya Sagar, B.S.

Mathematical Morphology on General Data

Challa, Aditya, Najman, Laurent and Daya Sagar, B.S.

Granulometric and Fractal Analyses for Feature (Shape-Size-Orientation) Based Classification of Planar and Grayscale Basins Hierarchically Decomposed from CARTOSAT-I DEMs

Vardhan, S. Ashok and Daya Sagar, B. S.

Quantitative Morphologic and Scaling Analyses of Lunar Digital Elevation Models (LDEM) Derived from TMC Data of Chandrayaan-1 Mission via Mathematical Morphology and Fractal Geometry

Surendran, Athira and Daya Sagar, B.S.

Quantitative Characterization of Complex Topologically Prominent Components of Porous Media derived from Rocks of Petrologic Significance via Mathematical Morphology and Fractal Geometry

Daya Sagar, B.S.

Neural information processing

Majumdar, Kaushik
Research Activities

**Computer Science Unit, Chennai**

**Games in dynamic-epistemic logic**
Ghosh, Sujata and Padmanabha, Anantha

**From logical syntax to cognitive models**
Top, Jordi, Verbrugge, Rineke and Ghosh, Sujata

**Formal studies of the Bangla verb 'mone hoy'**
Banerjee, Arka, Karmakar, Samir and Ghosh, Sujata

- Weighted Independent Sets in Graph Classes
- Variations in vertex coloring

T., Karthick

**Vertex coloring of Graph Classes**
T., Karthick and Maffray Frederic

**Cograph dimension and permutation dimension of planar graphs**
Chacko, Daphna and Francis, Mathew C.

**Seymour’s Second Neighbourhood Conjecture**
Dara, Suresh, Francis, Mathew C., Jacob, Dalu and Narayanan, N.

**Dushnik-Miller dimension of d-dimensional boxes**
Francis, Mathew C. and Gonçalves, Daniel

**Cryptology and Security Research Unit, Kolkata**

**Quantum Information / Computing / Cryptography**
Paul, Goutam, Acharyya, Atanu (ASU), Das, Nayana (ASU), Das, Soumya, Chattopadhyay, Pritam and Ray, Souvik (SMU)

**Symmetric Cryptanalysis**
Paul, Goutam, Rahman, Mostafizar, Jana, Amit, Gangopadhyay, Sugata (IIT Roorkee).

**Steganography**
Paul, Goutam, Mukherjee, Imon (IIT Kalyani), Ganguly, Nabanita (JU), Saha, Sanjay Kumar (JU).

**Cloud Security**
Ruj, Sushmita, Sengupta, Binanda (ASU), Sardar, Lalitu, Dutta, Sabyasachi, Chatterjee, Ayantika, Nikam Nishant, Dixit Akanksha, Tahir Shahzaib (City University, London), Rajarajan Muthukrishnan (City University, London), Narayananmurthy, Srinivasan (NetApp Inc), Nandi, Siddhartha (NetApp Inc)

**Blockchains**
Ruj, Sushmita, Banerjee, Prabal, Singh Ram Govind, Mazumdar, Subhra, Pachal, Soumen, Kumari, Shashee, Conti, Mauro (Padua University, Italy), Lal, Chhagan (Padua University, Italy), Chattopadhyay, Anupam (NTU, Singapore), Sengupta, Sourav (NTU, Singapore), Raikwar, Mayank (NTU, Singapore)
Research Activities

Network Security
Ruj, Sushmita, Ghosh, Sarbani, Das Bit, Sipra (IIEST, Shibpur), Chatterjee, Tanusree (IIEST, Shibpur), Chatterjee, Ranit (IIEST, Shibpur)

- Block Cipher Modes of Operations
- Secure and Efficient Implementations of Cryptographic Schemes
  Chakraborty, Debrup, Sarkar, Palash (ASU), Lopez, Cuauhtemoc Mancillas (Laboratoire Hubert Curien, France), Ghosh, Sebati (ASU)

Physics and Earth Sciences Division

The Division comprises of two units: Geological Studies Unit (GSU) and Physics & Applied Mathematics Unit (PAMU), both located at Kolkata.

The major areas of research of the Geological Studies Unit are Structural Geology, Sedimentology, Stratigraphy and Palaeontology. Most of these studies are based on extensive field work.

The thrust areas of research in PAMU are Theoretical Physics and Applied Mathematics. Additionally, some experimental work is being done in the Fluvial Mechanics Laboratory of this Unit. Broadly, the scientists work in the areas of Astrophysics and Data Analysis, Biological Optics, Condensed Matter Physics, Cosmology of the Early Universe, High Energy Physics, Mesoscopic Physics and Nanoelectronics, Quantum Field Theory, Quantum Information Theory, Quantum Mechanics, Nonlinear Dynamical Systems, Sediment-fluid Interactions and Flow Visualization.

Scientists have also carried out work on indternally as well as externally funded projects. The division has published around 60 research papers in reputed international journals. It is also involved in teaching B. Stat. and M. Tech. courses apart from their own Ph.D. program. Also a few lecture series, workshops and conferences were organized during this period.

Geological Studies Unit, Kolkata

Research programme of the Geological Studies Unit currently hinges on

- The Archean greenstone belts of India, its tectonics and sedimentation as well as basin analysis
  Saha, Dilip

- Paleostress from fault slip analysis and paleosiesmicity in the Main Boundary Thrust zone

- Evolution of dolomite formations in the Cuddapah basin
  Bannerjee, Amlan

- Numerical models of fluid flow in Cuddapah basin

Sedimentary models of Precambrian Ergs in Brazil and India
Chakravorty, Tapan and Basilici, Giorgio

Tectonostratigraphic evolution of the Sonakhan Greenstone Belt
Patranobis Deb, Sarbani and Mazumdar, Tuasha

Study of diversity, ecology, and paleobiogeography of the Triassic, Jurassic and Miocene fauna. The fauna includes both vertebrates and invertebrates (chiefly gastropods)
Sengupta, Dhurjati Prasad, Bandyopadhyaya, Saswati, De, Chandreyee, Das, Shiladri Sekhar and Das, Sandip
Research Activities

**Sedimentary record of the Triassic - Jurassic fluvial to lacustrine transition in a continental rift basin and signatures of microbial activity in a Late Triassic**
Ghosh, Parthasarathi and Goswami, Suparna

**Morphometric studies of fossil vertebrates**
Sengupta, Dhurjati Prasad and Chakravorti, Sanjukta

**The sedimentology and stratigraphy of the Siwalik succession**
Chakraborty, Tapan, Mallick, Shuvra and Debnath, Arijit

**Physics and Applied Mathematics Unit, Kolkata**

The main areas of research in Physics & Applied Mathematics Unit are Theoretical Physics and Applied Mathematics. Additionally, some experimental work is also being done in the Fluvial Mechanics Laboratory of this Unit.

In a nutshell, the Scientists of the Physics & Applied Mathematics Unit (PAMU) of the Institute have been working in the areas of Astrophysics & Data Analysis, Astro-Optics, Condensed Matter Physics, Cosmology and Astroparticle Physics, High Energy Physics, Mesoscopic Physics and Nano-electronics, Quantum Field Theory, Quantum Information Theory, Quantum Mechanics, Nonlinear Dynamical Systems, Sediment-fluid Interactions and Flow Visualization. There is an externally funded new project on Synchronization, clustering and death in Networks of Complex systems (Theory and Application to Biology and Neurophysiology).

A brief account of the specific research work done by the members of PAMU during the year 2017-18 is given below:

**PHYSICS**

**Biological Optics**
Roy, A.K. and Sharma, S.K.

**Cosmology and Astroparticle Physics**

**Quantum nonlocality and measurement incompatibility**
Kar, G., Bandyopadhyay, S., Ghosh, S., Banik, M., Bhattacharya, S. S, Mukherjee, A. and Roy, A.

**Quantum Thermodynamics**
Parashar Preeti, Guha, Tamal, and Alimuddin Mir

**Theoretical Fluid Dynamics and Cosmology:**

- Cosmological applications related to structure formation from Noncommutative corrections in fluid dynamics has been explored.
- Cosmological applications related to generation of in-homogeneities and averaging prescriptions from Noncommutative corrections in fluid dynamics has been explored.
Research Activities

- Multiple Central Extensions of Galleili group and other properties of Noncommulative fluid in 3+1-dimensions have been studied.

- Generation of a cyclic evolutionary universe with small Cosmological constant in Noncommutative Cosmology.
  

High Energy Physics:

Study of spin-2 models in 2+1-dimensions with effect of non-commutative black hole in bulk metric ton boundary holographic superconductor has been analysed and extension of this model in presence of magnetic field has also been investigated


General Theory of Relativity:

Charged particle dynamics in Reissner-Nordstrom space-time is studied in Jacobi metric formalism

Ghosh, S., Das, P. and Sk., Ripon

Quantum Mechanics:

- Zero energy states in graphene have been obtained for a large number of electric fields. Magnetic confinement in graphene using finite magnetic fields has been studied

- Higher order standard and confluent super-symmetric partners of generalized quantum nonlinear oscillator have been obtained focusing on regular potentials and spectral modifications
  
  Roy, P., Roy, B., Nath, D. and Schulze Halberg, A.

Engineering routes for efficient thermoelectric energy conversion at nano-scale level

Chakraborty, S. and Maiti, S.K

Phonon transport

Maiti, S K

Molecular spintronics

Patra, M. and Maiti, S.K

Electron transport in interacting quantum systems

Roy, S., Saha, M. and Maiti, S.K.

Thin Topological Insulator

Siu, Z.B., Chowdhury, D. and Basu, B.

Weyl Semimetal

Menon, A., Chowdhury, D. and Basu, B.

APPLIED MATHEMATICS

Existence and Global stability analysis of chimera states:
Research Activities

The robustness of chimera states together with incoherent and coherent states in dependence on the initial conditions has been discussed using basin stability method

Ghosh, D., Perc, M., Lakshmanan, M., Osipov, G. V., Parmananda, P., Dana, S.K., Bera, B. K., Majhi, S., Rakshit, S. and Kundu, S.

Synchronization in temporal networks:

Intralayer and interlayer synchronization in time-varying multiplex network where the intralayer coupling interactions are switched stochastically with a characteristic frequency was explored

Ghosh, D., Sinha, S., Majhi, S., Rakshit, S. and Bera, B.K.

Nonlinear waves:

Nonlinear coherent structures, namely bright-dark and dark-dark solitons are obtained in a general coupled nonlinear Schrodinger equation with complex potentials admitting PT symmetry


EXPERIMENTAL RESEARCH - Fluvial Mechanics Laboratory

Experiments were done in the flume in Fluvial Mechanics Laboratory, ISI, to study turbulence characteristics due to combined wave-current flows over an obstacle or a sand bed, when the waves propagated against the flow with wave-blocking condition (i.e. the fluid (water) velocity equaled the group velocity of the wave). Differences in the nature of ripples on the sand bed at three distinct zones, fluid flow dominated, wave-blocking dominated and wave dominated zones, were analyzed

Chatterjee, D., Mazumder, B.S. and Ghosh, S.

A number of experiments were conducted in the laboratory flume over 2-D fixed rough dune. Two types of beds were used for study over isolated dune and a series of dunes. The time and double-averaging methodologies will be used for the analyses of experimental data

Sarkar, S.

Fluid Dynamics:

Turbulence characteristics of wave-blocking phenomena have been explored in Fluvial Mechanics Laboratory

Chatterjee, D., Mazumder, B.S. and Ghosh, S.

Biological Sciences Division

Agricultural and Ecological Research Unit runs several research projects covering the areas of Agriculture, Ecology, Nano Science, Plant Biotechnology, Biochemistry and Statistical and Mathematical modelling. In Agriculture, emphasis is given on Agronomy, Soil Chemistry, Soil Microbiology and Entomology. In Agronomy several trials are being carried out on cereals, legumes and vegetables in the fields and soils and plant samples are analyzed in the laboratory for several physical and chemical parameters. Scientists are working on projects pertaining to useful implication of nano science in the field of fertilizers and pesticides. Ecology is another major thrust areas of work. Scientists are working on invasive alien plant biology and their distribution along with their association and competition with other useful local plants. Extraction of eco-friendly edible oils as well as bio fuels from some plants are also part of the ecological researches that are being carried out in the Unit. Statistical and Mathematical modelling covers vast areas of interest to the researchers of the Unit.
Biological Anthropology Unit conducted bio-anthropological researches on bio-cultural determinants of: (a) Physical growth and development including secular trend; (b) Health and well-being of various occupational groups; (c) Aging and senescence with reference to health of slum dwelling elderly women and also (d) Health and well-being studies on Alzheimer's caregivers in Kolkata and its surroundings. The Unit has six research scholars; they are working on their own topics of research and collecting data from individuals of the respective area with the active supervision of respective supervisors.

The focus of research in the Human Genetics Unit is to understand the genomic and environmental contributions to common diseases in India.

**Epigenetic studies of oral cancer:**
Genome-wide CpG methylation confirmed the abnormal and dynamic variations in CpG promoters in various cancer genomes. They also revealed that the CpG methylation status (either hypo or hyper) of promoters affected the expression of protein coding genes and various noncoding RNAs. Oral squamous cell carcinoma (OSCC) is one of the common malignancies in Southeast Asia. Epigenetic changes, mainly the altered DNA methylation, have been implicated in many cancers. Genome-wide DNA methylation analysis identified several novel differentially methylated regions associated with OSCC. Study identified a unique set of hypomethylated regions, enriched in the promoters of immune response genes, and indicated the presence of a strong immune component in the tumor microenvironment.

**Genetic and epigenetic studies on Psoriasis:**
Several studies suggested psoriasis to be a complex multifactorial genetic disease, but the exact triggering factor is yet to be determined. Findings of the study suggested the association of IL12B with the psoriasis, however no evidence was observed for the epistatic effect of IL12B with HLA-Cw6 among the psoriasis patients in India.

**Statistical Genomics:**
The focus of these studies is to critically analyze existing statistical methodologies and to develop new methodologies for human genetics, especially for gene-mapping and genotype-environment interactions.

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**Agricultural and Ecological Research Unit, Kolkata**

**Fantastic yields in the system of rice intensification: fact or fallacy?**
Banik, P.

**Invasive alien species – a friend or a foe?**
Dewanji, A., Jha, P., Chatterjee, S., Bhattacharya, S. and Dewanji, A. (ASU)

**Development of natural food preservatives from spices and herbs**
Chattopadhyay, R.R.

**Host-parasite interaction between the rice root knot nematode (Meloidogyne graminicola) and rice**
Mukherjee, A.

**Utilization of Brick factory coal ash and fly ash through application of vermitechnology**
Bhattacharyya, P.

**Biochemical and physiological portrayal of Darjeeling tea cultivars towards the selection of superior clones against abiotic stress**
Das, S.
Exploring Potential of Sweet Sorghum (Sorghum bicolor L.) for Bio-Ethanol Production in West Bengal

Barik, S.

Evolution of Model Specific Relative Growth Rate with application to biological data

Bhattacharya, S., Mukhopadhyay, S., Bhowmick, A.R., and Yeasmin, F.

Does the generalized mean have the potential to control outliers?

Mukhopadhyay, S., Basu, A.N. (ISRU), Chattopadhyay, A., and Bhattacharya, S.

Modelling of Growth Profile of Chaetoceros sp. and its Steady State Behavior with Change in Initial Inoculum Size

Bhattacharya, S., Kundu, S., Mukherjee, J., Basu, S., Chattopadhyay, J. and Roy, S.

Sterculiafoetida, L.—Eco-friendly, cost effective and rich sources of nutritious edible oil, animal food supplements as well as biofuel and its multimodal application to environmental perspectives

Mandal Biswas, S.

Management Practices for growth, yield and quality of maize (Zea mays L)

Adhikary, S.

Modulation and demodulation of photosynthesis using micro-nutrient nanoparticles

Mitra, S., Barik, S. and Goswami, A.

Utilization of naturally occurring nanomaterials for restructuring root systems

Barik, S. and Goswami, A.

Enhancing growth of beneficial gut bacteria with oxide nanoparticles

Barik, S. and Goswami, A.

Biological Anthropology Unit, Kolkata

A Study on mental health and well-being of dementia caregivers in urban areas of West Bengal

Mukhopadhyay, S. and Basu, I.

Burden of frailty: A study on community dwelling rural elderly population in West Bengal

Mukhopadhyay, S. and Das, S.

Human Genetics Unit, Kolkata

Whole exome somatic mutation analysis in oral cancer and adjacent leukoplakia tissues: A study to understand progression of oral leukoplakia to cancer

Roy, B.

Genetic Mapping of rare variants, multivariate and longitudinal phenotypes

Ghosh, S.

On integrating several data sources in genetic association study

Mukhopadhyay, I.

Role of epigenetics in psoriasis: Identification of DNA methylation biomarker

Chatterjee, R.
Social Sciences Division

The Social Sciences Division consists of eight units spread over Kolkata, Giridih, Delhi and Bangalore. These are: Economic Research Unit (Kolkata), Linguistic research Unit (Kolkata), Population Studies Unit (Kolkata), Psychology research Unit (Kolkata), Sampling and Official Statistics Unit (Kolkata), Sociological Research Unit (Kolkata and Giridih), Economics and Planning Unit (Delhi) and Economic Analysis Unit (Bangalore).

The scientific workers of these units are extensively involved in research, teaching, consultancy, editorial work, externally and internally funded project works and academic administration. Research is carried out both at individual and collaborative/interdisciplinary levels. The faculty members are also providing guidance to the Research Fellows. Training programs/workshops are organized on a regular basis for non-ISI research fellows, college teachers and ISS probationers at different centres and at universities in the Northeastern region of India.

Economic Research Unit, Kolkata

The scientific workers of the Unit are extensively involved in research, teaching, training, consultancy and academic administration. The research is carried out both at individual and collaborative/interdisciplinary levels. These include theoretical as well as empirical research in economics and econometrics.

The details of the applied and theoretical researches in Economic Research Unit are given below:

**Experimental Analysis of decision under uncertainty, decision under deadlines, decision under peer effects.**

Banerjee, Priyodorshi

**Pro-poorness Orderings**

Chakravarty, Satya R., Chattopadhyay, Nachiketa and D’Ambrosio Conchita

**Poverty, Social Exclusion and Stochastic Dominance**

Chakravarty, Satya R.

**Ethnic Conflict**

Dasgupta, Indraneel and Bakshi, Dripto

**Linguistic Conflict and Linguistic Justice**

Dasgupta, Indraneel and Guha-Neogi, Ranajoy

**Outsourcing under Incomplete Information**

Kabiraj, Tarun and Sinha, Uday Bhanu

**R&D in a Duopoly under Incomplete Information**

Chatterjee, Rittwik, Chattopadhyay, Srobonti and Kabiraj, Tarun

**Balanced Implementability of Sequencing Rules, Identification of Sequencing Rules That are Implementable with Balanced Transfers in a Sequencing Problem**

Mitra, Manipushpak and De, Parikshit

**Subsistence, Saturation and Irrelevance in Preferences, Identifying Key Properties of Subsistence and Saturation and its Link to Irrelevances in Preferences of a Consumer**

Mitra, Manipushpak and Sen, Debapriya
Research Activities

**Equilibrium Co-Existence of Public and Private Firms and the Plausibility of Price Competition.** Showing the Equilibrium Co-Existence of Fully Public and Fully Private Firms in a Differentiated Product Duopoly Framework with General Demand Conditions

Mitra, Manipushpak, Pal, Rupayan, Paul, Arindam and Sharada P.M.

**Egalitarianism in the Queueing Problem. Identifying the Lorenz Optimal Allocation Rules from Three Different Classes of Fair and Pareto Efficient Rules and Then Making a Comparison between These Three Rules Using Lorenz Domination and Rawlsian Minmax and Maximin Criterion**

Mitra, Manipushpak, Youngsub Chun and Suresh Mutuswami

**Naive Lexicographic Preferences over Attributes. Characterizing Lexicographic Preferences When Preferences May Not Be Rational**

Mitra, Manipushpak, Goswami, Mridu Prabal and Sen, Debapriya

**Endogenous Conjectural Variations, Showing a Strong Equivalence Result with Price and Quantity Competition when Conjectural Variations are Endogenous**

Mitra, Manipushpak, Ghosh, Arghya and Paul, Arindam

- **Equilibria In Strategic Market Games. Identifying Equilibrium Conditions For Shapleyshubik Strategic Market Games**
- **Testable Restrictions of Equilibrium Outcomes in Strategic Market Games. Identifying Conditions on Individual Preferences Under Which Any Observation of Trading Decisions in The Shapley-Shubik Strategic Market Game Can Be Justified As An Equilibrium Outcome**

Mitra, Manipushpak, Ray, Indrajit and Roy, Souvik

**Dynamic VCG Mechanisms in Queueing. Identifying Dynamic (Or Online) VCG Mechanisms and Also Addressing the Budget Balance Issue**

Mitra, Manipushpak, Ghosh, Sambuddha and Long, Yan


Pal, Monoranjan

**Nonlinear Models to Study the Effect of Inflation on Inflation Uncertainty in OECD Countries**

Banik Chowdhury, Kushal (Tezpur ISI) and Sarkar, Nityananda

**Study of the Relationship between Stock Returns and REIT Returns**

Das, Mahamitra and Sarkar, Nityananda

**Effects of Demonetisation on Financial Sectors of India: A VAR Approach**

Sarkar, Nityananda and Mukhopadhyay, Debabrata

**Gender Bias in Education, Intra-household Allocation Models**

Majumder, Amita and Mitra, Chayanika

**Purchasing Power Parity, Cross Country Studies, Poverty, Inequality, Welfare**

Majumder, Amita, Ray, Ranjan and Santra, Sattwik

**Applied Demand Analysis (Parametric and Semiparametric Models), Commodity Taxation.**

Majumder, Amita, Chakrabarty, Manisha, Ray, Ranjan and Santra, Sattwik
Research Activities

**Linguistic Research Unit, Kolkata**

During the period (April 2017 - March 2018) the *Linguistic Research Unit* of the Institute is engaged in research activities in the areas of Cognitive Linguistics, Corpus Linguistics, Computational Linguistics, Language Technology, Sociolinguistics, Field Linguistics and Descriptive Linguistics.

- Substantivist Lexicological Study of Bangla
- Interlexical Study of Asamiya in a Substantivist Framework
- Sociolinguistics.

**Dasgupta, Probal**

- POS Tagset Generation for Bangla Text Corpus
- POS Tagged Hindi-Bangla Parallel Translation Corpus
- Chunked Hindi-Bangla Parallel Translation Corpus
- Bangla Web Text Corpus Generation
- Corpus of Indian English used in Newspapers (From Newspapers)
- Bangla Pronunciation Dictionary in Electronic Form
- Corpus-Based English Language Teaching (C-BELT) System
- Generation of a Lexical Database of Transliterated English Words in Bangla Corpus
- Generation of a Lexical Database of Pronominal Forms in Bangla Corpus

**Population Studies Unit, Kolkata**

Faculty and Scientific workers of this unit are involved in various teaching, training and research activities. This unit is also contributing in teaching in ISEC Courses in regular as well as specialization in Demography. Some collaborative research projects with other units are undertaken. During the year, the members of the unit published papers in journals and books, and participated as a speaker or resource person in national and international seminars, conferences and workshops. The following are the list of topics of major research being carried out by the unit during the year.

- **An Appropriate Statistical Method for Analysing Determinants of Fertility and Their Roles in Indian Context**
- **Determinants of Population Growth at Household Level – A Case Study Giridih District of Jharkhand**

**Pathak, Prasanta**

- Inequality in Childhood Immunization in India during 1992/93 - 2005/06: A Causal Analysis Approach
- Gender disparity in socio-economic status of the children across the states in India during 1992-2006
- Gender disparity in curative health care utilization among the under 5 children in India during 1992-2006: A causal analysis approach
- Inequalities in health care infrastructural facilities and access to health care services across the states in India

**Barman, Subhash and De, Partha**

- Trends in components of under-five mortality in Indian major states

**Socio-economic Inequality of Child Immunization in the Eastern and North-Eastern States of India**

Barman, Subhash and De, Partha
Research Activities

- Evaluating the performance of health care systems across states and their correlates for their inefficiency and backwardness using Nonparametric Data Envelope Model
  De, Partha

- A study of knowledge, attitudes and practices (KAP) of families toward their children with developmental challenges

Psychology Research Unit, Kolkata

Faculty members and research fellows of the Psychology Research Unit are engaged in teaching, research and training in the following specific areas: construction of violence checklist, acquisition of Spatial frames of references, self-care efficacy in diabetes management, a study on metamemory and working memory among school-going adolescents, value profile convergence and divergence in obsessive compulsive disorder and somatoform disorder. Besides this, the unit provides course work on data visualization to the Post Graduate Psychology students of the University of Calcutta. Some Ph.D. scholars of the University of Calcutta have received the academic support from the unit.

Safe school Survey
Dutta Roy, D. and Sharma, Shubhangi

Association of Visuospatial Reasoning Abilities and Home Environment
Dutta Roy, D. and Datta, Sumona

Self-care Efficacy in Diabetes Management:
Dutta Roy, D. and Adhikari, Sravanti

A Study on Metamemory and Working Memory Among School-Going Adolescents
Dutta Roy, D. and Khatoon, Murshida

Cognitive Factors in Suicide
Chatterjee, G. and Karmakar, Sabornee

- South Asian Face Database

- The Cognitive Architecture of Face-Processing – Understanding the Separation of Information Streams

- Human Face and Body Skin Tone and Their Relationship with Various Biological and Social Parameters.
  Chatterjee, G. and Chakraborty, Neloy

Effect of Internet of Brain Structure
Chatterjee, G., Ghosh, Priyanka, Kanai, Ryota and Datta, Himadri

Studying the Phenomenon of Disgust with reference to Genetic Contribution using Twins
Chatterjee, G. and Singh, Dhairyya

Academic Stress and Counselling Among Higher Secondary Students of Kolkata
Bhattacharya, Himani

Sampling and Official Statistics Unit, Kolkata

The topics of research of this unit are follows:

Academic Stress and Counselling Among Higher Secondary Students of Kolkata
Bhattacharya, Himani

Distributive Impacts of Loans to Finance Smallholder Agriculture
Research Activities

- Clientelistic Politics and Agent-Intermediated Lending: How Political Agents Use Targeted Loans to Influence Vote Shares
  Mitra, Sandip, Visaria, Sujata, Mookherjee, Dilip and Maitra, Pushkar

- Market Structure and Middleman Margins in Potato Markets in West Bengal: Evidence from Trader Surveys:

- Assessing the Relative Importance of Information and Credit Constraints: An Empirical Study of Agricultural Sales
  Mitra, Sandip, Visaria, Sujata, Mookherjee, Dilip and Maitra, Pushkar

Resource Transfers to Local Governments: Political Manipulation and Voting Patterns in West Bengal
Mitra, Sandip, Bardhan, Pranab, Mookherjee, Dilip and Nath, Anusha

- Assessing the factors that affect the health status of M.Sc Second Year students of Kalyani University using Ordinal Logistic Regression analysis. M.Sc.(Stat.) Project, Kalyani University (2017)


- Estimating Sensitive Population Parameters, Protection of Privacy in Randomized Response Techniques, Determination of Robust Optimum Plot Size and Shape in Agricultural Statistics

- Estimating Sensitive Population Proportion By a Three-Stage Forced Response Model

- Protection of Respondent’s Privacy in Estimating Sensitive Population Proportion By Hypergeometric Randomized Response Model
  Dihidar, Kajal

Respondent Privacy in Randomized Response Surveys for Continuous Sensitive Variables
Dihidar, Kajal and Bose, Mausumi (ASU)

- On The Robust Estimation of Optimum Size of Plots and Estimation of Data-Dispersion Matrix Under Complex Spatial Structure Prevalent in Field Experiments
  Dihidar, Kajal and Pal Satyabrata

- Assessment of the Socio-Economic Impact of National Highway 6
- Development of Test Analytic Framework for Multiple Choice Type Online Tests
  Chakraborty, Asit Baran and Others

Reviewing NSS Sampling Design for Household Surveys in Rural Areas
Kar, Aloke

- Developing an Appropriate Structure Preserving Estimation (SPREE) Method for Estimating Domain-Level Aggregates from NSSO Household Surveys
- Developing an Appropriate Methodology for Estimating Proportion of Villages with Specific Infrastructural Facility
  Kar, Aloke and Others

- Examining Why a Reference Period of “Last Week” In Consumer Expenditure Surveys Gives Higher Estimates Than a Reference Period of “Last Month”
- Examining To What Extent Values of Consumption Reported in NSS Consumer Expenditure Surveys are Derived By Multiplying Reported Quantity By A Price
- Influence of Reporting Behaviour and Reporting Biases on Consumer Expenditure Survey Data
  Chaudhury, Prabir
Teaching in Sociology inside and outside ISI are being carried out by members of the Unit. Courses are taught to students of B. Stat 3rd year and of the Post Graduate Diploma in Computer Applications (PGDCA) Course at Giridih. In addition, two Ph.D. students of the Unit (one at Kolkata and other at Giridih) are being supervised.

Researches are being carried out on the following topics:

**Small-marginal landholders’ farming and livelihood issues: A study in Jharkhand**
Behera, Hari Charan and Pal, Indrajit

**Agrarian Questions under Neoliberal Economic Policies in India: A Review and Analysis of Dispossession and Depeasantisation**
Rao, P.V. and Behera, Hari Charan

**Effect of Socio-economic and Demographic Factors on Nutritional Status of Indian Post-adolescent Teenagers: A Set Theoretic Approach**
Shome, Suparna, Adak, Dipak Kumar, Pal, Manoranjan (ERU), Hossain, Golam and Bharati, Premananda

**Women’s Decision Making Autonomy and its Influence on Nutritional Health in India: A North-South Regional Comparison**
Sahoo, D., Shome, Suparna, Pal, Manoranjan (ERU) and Bharati, Premananda

**Influence of maternal autonomy and socioeconomic factors on birth weight of infants in India**
Shome, Suparna, Pal, Manoranjan (ERU) and Bharati, Premananda

**Influence of Socio-Economic Status and Television Watching on Childhood obesity in Kolkata**
Bharati, Susmita, Pal, Manoranjan (ERU), Shome, Suparna, Roy, P., Dhara, P. and Bharati, Premananda

**Assessing Overweight among Children Aged 6-10 Years in Kolkata, India**
Bharati, Susmita, Pal, Manoranjan (ERU), Hossain, M.G. and Bharati, Premananda

**Contribution of different anthropometric measures to BMI towards assessing overweight & obesity of (6-10 year) children in Kolkata, India**
Pal, Manoranjan, Bharati, Premananda and Bharati, Susmita

**Growth and Nutritional Status among Pre-adolescent and adolescent Bengali boys and girls in North 24 Parganas, West Bengal, India**
S. Banerjee; S. Biswas, Bharati, Susmita, Pal, Manoranjan (ERU), and Bharati, Premananda

**Social Network Analysis in the Context of Community Response to Disaster**
Goswami, Rupak, Misra, Sanchayeeta, Mandal, Tandra and Jana, Rabindranath

The Economics and Planning Unit faculty continues to work on the cutting edge of economic research, both in theory, as well as empirical analysis.

Recent works in mechanism design and auction theory have focused on stability of matching rules for teams, implementation via undominated strategies in bounded mechanisms, design of auctions with...
Research Activities

non-quasi-linear preferences, and contract design for behavioural agents who use multiple rationales to make decisions. Research in contract theory has involved rewarding talents in organisations, and lender competition. Research in agriculture economics has looked at welfare effects of price supports, risk sharing in world food markets, and basis risk in agricultural insurance. In environment economics research has focused on air pollution, and social costs of power from coal and renewables. Research on education has looked at returns to STEM, teacher transfers, internal migration for education, improving learning outcomes through information, school feeding programs, impact of education loans on higher education, and gender peer effects in high schools. Research in caste has explored social connections and financial incentives in India's manufacturing sector, and the relationship between inter caste marriage and education. In health economics research has focused on estimating neonatal mortality rate, gender discrimination in a tertiary care hospital, and optimal utilisation of resources and ranking of the district hospitals across India. Researchers have also worked on the impact of electronic voting machines on democracy and development, and on the impact of land reforms on property rights and financial development. In theoretical macroeconomics researchers have worked on the annuity role of estate tax, progressive benefits of social security (pension), education pension dependency, and optimal intergenerational transfers. Research in empirical macroeconomics has focused on monetary transmission in India, impact of fiscal austerity on macroeconomic outcomes of emerging market economies, and the effects of targeted government employment programs on labor market outcomes.

Below is a more detailed breakdown of research interests by faculty members:

- **Improving Learning Outcomes through Information: Experimental Evidence from India**
  Afritdi, Farzana

- **Social Connections and Financial Incentives: A Quasi-field Experiment in India's Manufacturing Sector and School Feeding Programs and Classroom Performance**
  Bishnu, Monisankar

- **Examining the Effect of Lender Competition in the Presence of Collusion between Borrowers and Bank Officers**
  Roy Chowdhury, Prabal and Dam, Kanishka

- **Examining the Effect of Productivity Shocks on Marriage Market Institutions**
  Roy Chowdhury, Prabal and Chowdhury, Shyamal

- **NK - DSGE Model to Understand Monetary Transmission in India**
  Ghate, Chetan (in collaboration with the banking sector)

- **Small Open Economy – Real Business Cycle Models (SOE-RBC): The Impact of Fiscal Austerity on Macroeconomic Outcomes in Emerging Market Economies**
  Ghate, Chetan

- **Effects of Targeted Government Employment Programs on Labour Market Outcomes in Developing Economies Using A Search and Matching Friction Framework**
  Ghate, Chetan

- **Missing Female Patients: An Analysis of Gender Discrimination in A Tertiary Care Hospital in India, 2016**
Research Activities

- The Impact of Electronic Voting Machines on Democracy and Development (Paper Was Cited in The Parliamentary Debate By Union Minister Ravi Shankar Prasad)
- Estimating Neo Natal Mortality Rate at the Sub Regional Level for India: A Bayesian Approach
- Using Data and Analytics to Advise NITI Aayog for Optimal Utilization of Resources and Ranking of The District Hospitals Across India
  Kapoor, Mudit
- Design of Auctions in Environments Where Preferences of Agents Need Not Satisfy Quasilinearity Assumption: Applications include Budget Constrained Bidders In Auctions
  Mishra, Debasis
- Contract Design For Behavioral Agents Who Use Multiple Rationales to Make Decisions
- Returns to STEM
- Teacher Transfers
- Internal Migration for Education
  Mukhopadhyay, Abhiroop
- Welfare effects of price supports
- Risk Sharing in World Food Markets
- Basis Risk in Agricultural Insurance
  Ramaswami, Bharat
- The Effect of Electric Induction Stove Use on Air Pollution
- The Social Costs of Power from Coal and Renewables
  Somanathan, E.
- Optimal Intergenerational Transfers and the Rise and Fall of Pay-As-You-Go Pensions
- Land Reforms, Property Rights and Financial Development
- Who’s Education Matters? An Analysis of Inter Caste Marriages in India
- Impact of Education Loans on Higher Education: The Indian Experience
- Gender Peer Effects in High Schools: Evidence from India
  Ray, Tridip

Economic Analysis Unit, Bangalore

Economic Analysis Unit (Bangalore) is engaged in research on Climate change and agricultural yields, Livelihoods and human development in Tripura, Small Farmers in India and research on women workers of coffee industry.

- Research on Livelihoods and human development in Tripura
- Small Farmers in India: Evidence from Village Studies: analysis of data on production, production systems and livelihoods, and the socio-economic characteristics of different strata of the rural population.
  Swaminathan, Madhura and Ramachandran, V.K.
- Research on women workers of coffee industry using primary survey and secondary sources: Gender division of labour and forms of production of coffee plantation workers
  Chattopadhyay, Molly and Pais, Jesim
Statistical Quality Control and Operations Research Division

The Division comprises of eight SQC & OR Units located at Bangalore, Chennai, Coimbatore, Delhi, Hyderabad, Kolkata, Mumbai and Pune and the Central SQC (CSQC) Office located in the main campus at Baranagore which co-ordinates the activities of the Division. The Division presently has 39 Faculty Members at different levels and designations.

The scientific workers of the Division are extensively involved in research, teaching, consultancy (with a special emphasis to enhance Quality and Productivity), editorial work, externally and internally funded project works and academic administration. The uniqueness of the Division is in carrying out research in application areas and disseminating Statistical Knowledge to a large section of the industry, and thus helping the country in enhancing Quality and Productivity of goods and services.

Research is carried out both at individual and collaborative/interdisciplinary levels. Training programs/workshops are organized on a regular basis.

The Division is instrumental in running the following Academic Programmes:
- M.Tech. (QROR) programme at Kolkata;
- M.S. (QMS) programme at Bangalore and Hyderabad;
- Part-Time Certificate Course in SQC at Bangalore and
- Part-Time Certificate Course in SQC at Hyderabad.

The faculty members of the division also teach in other academic programmes like B.Stat., M.Stat. (both Kolkata and Chennai), M.S. (LIS) (Bangalore). They also supervise Ph.D. theses and Dissertation and Project work of M.Tech. (QROR), M.S. (QMS) and M.Stat. students.

Some of the main thrust areas of research of the Division during this period are: Generalized Positive Subdefinite Matrices and Interior Point Algorithm, Progressive type-I interval censoring with random removal; Process Capability Indices; Fuzzy Optimization Approach for Software Reliability Estimation; Mathematical Programming; Control Charts; Linear Complementarity Problem (LCP) and its generalizations, Optimization problem in graph theory, and Multivariate Statistical Process Control.

The scientific workers of the Division published more than 32 papers in reputed international and national journals and colleagues also contributed towards editorial activities of monographs and journals.

Apart from the usual Industrial/Organisational consultancy projects, the Division has also taken up some very interesting and useful projects of National Importance like

i. Impact on Noise Quality due to Highway and Infrastructure Development
ii. Problems and Prospects of Tea Industry in India
iii. Reduction of Fatalities due to Road Accidents
iv. Improving Effectiveness of Swachh Bharat Mission – Urban
v. Improving Defence Production System
vi. Reducing the Lead Time in Product Development of Knitted Fabric Manufacturing
vii. Process Optimization for Reducing the Rework on the Wiper Arm Rod
viii. Developing a methodology to Normalise the scores of the students from Different Examination Boards,
The Division also caters to the needs of some of the industries abroad.

**SQC and OR Unit, Kolkata**

- Finiteness of Criss-Cross Method in Complementarity Problem
  - On the Convergence of an Iterative Method for Solving Linear Complementarity Problem with WGPSBD
  - On existence results for some nonlinear system of equations  
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- Impact on Noise Quality due to Highway and Infrastructure Development
- Problems and Prospects of Tea Industry in India
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• Control Chart for Ordinal Data
• A Robust Multivariate Control Chart

**Assessing lifetime performance index of Weibull distributed products using progressive type II right censored samples**
  - Dey, S., Sharma, V.K., Anis, M.Z. and Yadav, B.

**Estimation of reliability of multicomponent stress-strength for a Kumaraswamy distribution**
  - Dey, S., Mazucheli, S. and Anis, M.Z.

**Some characterizations of exponential distribution**
  - Ahsanullah, M. and Anis, M.Z.

**Modeling Multistage Process Monitoring and Fault Detection Strategies under Partial and Imprecise Information**
  - Das, P., Gauri, S.K. and Nath, S.

**Bayes estimation of quality adjusted lifetime (QAL) distribution in illness-death model**
  - Pradhan, Biswabrata and Roy, Soumya

**Optimum warranty length under Type-II unified hybrid censoring scheme**
  - Pradhan, Biswabrata, Sen, Tanmay, Bhattacharya, Ritwik and Tripathi, Yogesh Mani

**Hybrid inspection plan for optimal availability**
  - Chakraborty, Ashis Kumar and Sinha, Soumi

**Reliability estimation of software at optimal stopping time**
  - Chakraborty, Ashis Kumar and Panja, Arindam

**Software Reliability Modelling**
  - Chakraborty, Ashis Kumar and Chatterjee, Parna

**Statistics and Machine learning**
  - Chakraborty, Ashis Kumar and Chakraborty, Tanujit

**Reduction of Fatalities due to Road Accidents**
  - Bandyopadhyay, Amitava
Research Activities

**Improving Effectiveness of Swachh Bharat Mission – Urban**
Bandyopadhyay, Amitava, Manna, D.K., Sett, Ranjan, Biswas, Amit, and Sampangi Raman, D.

**Improving Defence Production System**
Bandyopadhyay, Amitava, Sett, Ranjan, Das, Arup K., Gupta, Abhijit, Rao, G Murali and Murthy, A.L.N.

**Integrated shift and drift control of a growth process**
Mondal, P.

**SQC and OR Unit, Delhi**

- Mathematical Programming
- Linear Complementarity Problem (LCP) and its generalizations
- Optimization problem in graph theory
- Matrix Theory (Study of Matrix Classes useful in Complementarity, Optimization and Game Theory)

Neogy, S.K.

- Design of Experiments – Static Characteristics
- Dynamic Characteristics and Categorical Characteristics in a multi response processes

Chakravorty, Rina

- Mathematical Programming
- Matrix classes in Linear Complementarity Problem
- Game theory

Dubey, Dipti

**SQC and OR Unit, Bangalore**

- A study on Panel data regression of cross-sectional data that varies over time

Chowdhury, K.K.

- Development of a control chart procedure for detecting the impending termination of business process outsourced accounts

- Development of a slopping control chart methodology for simultaneously monitoring multiple characteristics

- Development of a methodology for simultaneous optimization of continuous and categorical characteristics

- A control chart for monitoring characteristics exhibiting nonlinear profile over time

John, Boby

**SQC and OR Unit, Coimbatore**

**Textile Sector**

- Reducing the Lead Time in Product Development of Knitted Fabric Manufacturing
Research Activities

for JJ tex

- Reducing the Workers Attrition rate using the statistical Diagnostics for Shiva Tex, a Textile Spinning Mill.
- Reducing the Internal Customer Complaint of small parts cell from Machine Shop in Lakshmi Machine Works(LMW)

Automobiles Sector
- Process Analytics for Reducing the Rework on the Fuel Indicator Rod from MSME to OEM
- Process Optimization for Reducing the Rework on the Wiper Arm Rod

Software Sector
- Capability in consistency of Clinical Information System of Electronic Medical Records(EMR) Company by using the Statistical Analysis
- Error reduction of Wrong Clinical Provider Name in a Multinational Health Care Record Company

Health Care Sector
- Enhancing the Probability of Salvaging of legs among Poly trauma Cases (Ganga Hospital) using Discriminate Analysis and Logistic regression
- Reduction of Re-Categorization Process of error encountered in EMR in a Multinational HealthCare Company.

Infrastructure
- Sensitivity of Cost of Production by Identifying Critical to Cost Parameter and Critical to Product Mix in a Rock Crusher Plant and introducing process design studies for M-Sand
- Business management System for Corporate Office on key Result Areas (KRA) on various projects sites from different locations.
- Developing Metric for day to day Management Information System

Food Processing
- Reduction of Flies and Pests in Kitchen Area
- Reduction of Plastics and Synthetic Materials found in the Cooking Space
- Economic Order Quantity of Stores and Control of Dispatching Materials
- Waste Segmentation and Disposal System

Engineering Sector
- Non-Conformance Reduction for the Flow Products – Machine Shop
- Honouring Delivery Schedules in Exports of Valve Trim Parts to Valve Manufactures for Oil & Gas Industries
- Reducing the Cost of Poor Quality by Minimizing the Pump Failure Service Cost Within Warranty (CRI Pumps)
- Optimisation of Setting up Time Reduction in CNC Versatile Spring Forming Machines

Public Sector
- 100 Wards Analysis for Coimbatore Corporation To implement Swachh Bharat scheme a Gap analysis with SMART solutions for SMART City Projects
- Rural Development Program- Solar Energy – Enhancing the Quality of Life (Malappuram, Chaliyar, Kerala)

Education Sector
- Educational Data mining for NEET exam

Rajagopal, A.
Research Activities

SQC and OR Unit, Hyderabad

- Linear Complementarity Problem
- Fuzzy Metric Spaces
- Decision Support Systems
- Six Sigma
- DOE
- SPC
- Text Data Mining
- Generalized Gaussian Distributions (GGD)


SQC and OR Unit, Mumbai

Multivariate Statistical Process Control

Sikder Sagar

Library, Documentation and Information Sciences Division

The Library, Documentation and Information Science Division comprises
- Central Library, Kolkata
- ISI Delhi Centre Library, Delhi
- ISI Bangalore Centre Library, Bangalore
- ISI Chennai Centre Library, Chennai
- ISI North-East Centre Library, Tezpur
- Prasanta Chandra Mahalanobis Memorial Museum and Archives, Kolkata

The Division is perhaps the most important central facility of the Institute.

Central Library, Kolkata

The Central Library occupies a unique place in academic and research activities of the Institute. The Central Library moved to its present location in 1978, and it occupies 5 floors (60000sq.ft) of a ten-storied building at Kolkata. The Central Library seeks to:

- Meet the informational, educational, recreational, and cultural interests and needs of the user community by providing timely access to print and non-print resources appropriate to those needs.
- Encourage and facilitate reading, literacy and lifelong learning by supplying resources in a variety of formats designed to interest, inform, and enlighten.
- Protect the public's right to know by providing equal access to information needed for informed and effective daily living, decision making, problem solving and thoughtful participation in civic/community affairs.
- Provide the highest quality service and to organize and display the collection for easy, open access by all.
- Maintain publication exchange programme of the Institute with regional, international, national, and foreign institutions and organizations.
- Continue to function as the Eastern Regional Library of the National Board of Higher Mathematics [NBHM], Department of Atomic Energy, Government of India since 1989.
Research Activities

Over the years, the ISI Central Library has attained the distinction of being one of the richest libraries in India in the areas of mathematics, statistics, economics, theoretical computer science and related areas. To achieve the goals of the Library, following activities were undertaken during the year under report:

Collection Development

The Library maintains an excellent collection of books, journals, reports, rare and special collection, government publications, data-books, theses and other documents/materials in print and electronic formats. During the year under report, the library accessioned 589 printed books and 2230 e-books on statistics and mathematics (accessible among three centers via Springer through IP ranges), 03 CDs and 02 books on project collection were purchased from ISI budget, while 50 books were received on complimentary basis. The Library also accessioned more than 1000 bound volumes of journals and subscribed to 150 scholarly journal titles in print. More than 30 journal titles were received as complimentary and 85 titles in exchange with Sankhya. The library received and processed more than 2000 loose issues of journals. It classified and catalogued 589 new books. It also procured and processed 150 titles which includes govt. Reports, Annual Reports, Data Books, Unit Level Data from census, NSSO and CSO (in CD’s) on government reports/data-books etc. Beside this, the library has added a collection of 150 English books and 32 Bengali books and 2 Hindi books on literature, humanities, travel, health and recreation and 22 Daily Newspapers & Magazines in its Workers’ Circulating Library.

E-Resources

The library has a good collection of electronic resources on different media and has access to several online journals/databases. During the year under report, the library has added approximately 2230 e-books, 10 CDs & DVDs containing books and CDs on statistical data. The library has provided the online access to about 22000+ full-text journals. It has renewed the online database like MathSciNet, Econlit with full text, Science Direct, Springer Link, T & F Journal online, Willy Inter Science, Oxford University Press Journals, CUP Journals, JSTOR through consortia. It has also subscribed to the IEL online of the IEEE/IEEE publications, ACM Digital Library and Current Index to Statistics (CIS) on Web. The library has also subscribed to Census data, online database (CEIC data base) and statistical data sources (CMIE and India Stat. com) available through IP’s and/or password based to provide data services to its potential users.

Publications Exchange Programme

The library maintains the publication exchange programme of ‘Sankhya - the Indian Journal of Statistics’ with 52 national and 23 international institutions/organizations. The 23 international agencies are from various countries of the world such as Bangladesh, Belgium, Brazil, Canada, China, Taiwan, Croatia, Czech Republic, Denmark, France, Hungary, Italy, Japan, Pakistan, Poland, Romania, Russia, Slovakia, Spain, Switzerland, Thailand, UK and USA. In exchange, the Library has received 85 titles during the reporting period.

Membership

Membership of the ISI-Library is restricted to persons with post-graduate or equivalent academic qualification and interest in the objectives of the Institute. Faculty members, research scholars, students, research associates, visiting scientists, ISEC trainees, project-linked staff, project assistants, ISI-employees, outside students and the Institute members are eligible for the membership of the Institute Library. However, they have to apply for the membership of the library and receive a bar-coded Library Card. During reporting period, library membership was given to 274 persons and 1022 readers were given special permission to use the library for a short period. Currently the total number of library member is 3406. Total number of members including staff, students and research scholars of the Institute is 960 in its Workers’ Circulating Library.
Services

The ISI-Library, since its inception has been providing a variety of library and information services to its users. The services presently being provided include:

**Web-OPAC**: Members use this facility to browse and search the database to see the status of a document including their own transactions.

**Lending/ Document Delivery Service**: During this period 52850 books and other documents were issued to the user on loan and reference. Publications from Government of India and other International Organization and data CDs, were issued to users for reference purpose. It provided 4900 pages of reprint requests and 20000 pages in soft copy from different full text database /journals. It provided email-based reminder services like 7-day advance alert, long overdue notice and check-in information. The Workers’ Circulating Library issued 2000 books for lending and reference during this period.

**Inter-library loan**: 05 Books were borrowed from other libraries, while 21 books were lent to other libraries.

**Current Awareness Service**: 12 monthly lists of current additions to the library were made available online.

**Self-Photocopying Service**: The library provided the Self-photocopying service in its periodical section, which was available everyday throughout the library hours. During this period 4000 pages were photocopied from the journals.

**Electronic Document Delivery Service**: Full-text articles and/or bibliographical data were provided through email from online resources. Besides electronic document delivery, 2000 pages of printouts were also supplied against demand.

**Online Full-Text Access to Journals/ Database**: During the period under review, the library has provided services from more than 22000+ online journals and major databases like MathSciNet, Econlit with full text, Science Direct, Springer Link, T & F Journal online, Willy Inter Science, Oxford university Press Journals, CUP Journals, JSTOR, IEEE/IEE publications, ACM Digital Library and Current Index to Statistics (CIS) on Web through consortia. The online access is available through campus-wide network.

**Reprographic & Photographic Service**: During the year, it provided around 409270 pages of photocopies, 662 graphic designs, 7901 scanned items, 3500+ pages of color and b/w pages of print outs, 18300 pages of color photocopies, and 966 spiral bindings. 853 pages were laminated. The Unit is developing a digital archival repository comprising of ISI’s old documents like ISI council proceedings, library’s accession register, administrative documents, old letters of ISI’s distinguished persons etc. that are preserved in paper document and microfilm. 17650 frames of microfilm/fiche were digitized. The Unit has provided the Digital Photo Archive of ISI. It has digitized all rare photographs of ISI since its inception.

**Documentation Service**: A searchable bibliographic database has been prepared on scientific contributions made by the ISI scientists on all subject fields since 1934. The entries are currently being subjected to editing.

**General Enquiry Assistance & Consultation Service**: Assistance has been extended to 274 external visitors including participants of the Winter School, NBHM Nurture Programme, Summer Research School and visiting students of different institutions. During the reporting period orientation programme was given to the newly admitted students & research scholars.
Research Activities

**Special Initiatives:**

**Consortia arrangements:** It has completed binding of more than 1000 physical volumes of journals. Lamination and de-acidification of 16 rare books of 3500 pages were completed. 173 books were fumigated and rare and out-of-print books were scanned and photocopied.

**Preservation and conservation:** It has completed binding of more than 1000 physical volumes of journals. Lamination and de-acidification of 16 rare books of 3500 pages were completed. 173 books were fumigated and rare and out-of-print books were scanned and photocopied.

**Institutional Repository (IR):** A prototype of IR of ISI has been created. Currently it covers scientific writings of Professor P.C. Mahalanobis, full-text of 3000+ ISI research papers, full text of all convocation addresses, ISI Annual Report from 1933 to 2008 and 100 Ph.D. theses.

**Digitization:** 40 Monographs (books & reports) were digitized. These will be made available on the Web after the completion of the work.

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**Library, Delhi**

Indian Statistical Institute, Delhi Centre, maintains an academic library, which aims to be a leading library in the fields of Economics, Mathematics, Statistics, Operations Research and Statistical Quality Control. The library caters mainly to the needs of bonafide students, scholars and staff of the Institute. However, it is also open for reference to academic and research users of other educational and scientific institutions of the city and its neighboring regions.

It is an automated library with an extensive collection of books, journals, CDs, reports, govt. publications and other documents in print and electronic formats. The ISI Delhi Centre library also act as one of the NBHM regional library of northern India and provides information resources to support academic and research activities in the areas of Mathematics, and allied subject areas. Some of the main activities of the library during the period under review were as under:

**Collection Development**

**Books:** The library accessioned 123 new books and 183 bound volumes during the year under report from the ISI and NBHM funds. The library also received 25 books as gift from different sources. Thus raising the current library stock both books and bound journals to 51907 volumes.

**Journals:** During the period under review 132 journals, both foreign as well as Indian have been renewed. 20 journals on gratis and 9 journals in exchange are being received in the library from various sources.

**Online Resources:** The library also participated consortia based subscription to electronic resources and provided users more than 700 full text electronic journals access including EconLit, SIAM e-journals, Current Index to Statistics, MathSciNet, Science@Direct, SpringerLink, J-STOR, , Wiley Journals, Cambridge Journals, Oxford Journals, Taylor & Francis, INFORMS, AMS, IMS, Sankhya and many others.

**E-Books:** Under the ISI consortia arrangement Springer e-books package a total of 2237 e-books access has been provided to users on statistics and mathematics subject.

**CDs:** The library has more than 580 CDs of different reference books and journals including databases.
**Exchange Programme**: Exchange program established with seven scientific institutions in the regions of China, Korea, Netherlands, Poland, Spain and Vietnam for getting their publications in exchange to our journal ‘Sankhya’- Indian Journal of Statistics and “Texts and Readings in Mathematics” (book series).

**Library Services**

**Circulation services**: During the period April 1 2017 to March 31, 2018, total 167 members, availed the lending facilities as permanent members of the library, whereas more than 220 users availed reference facilities of the library. More than 3000 publications have been circulated among the members.

**Reprographic services**: During the period under review more than 2500 pages have been Xeroxed and made available to users of the library and outsiders. Xerox facilities were also provided to research scholars of neighboring institutes under NBHM programme.

**Electronic document delivery service**: In addition to Photocopy facilities, more than 1200 full-text articles (PDF files) were provided to the users.

**Current awareness service**: The following lists were brought out regularly from the Library:
- Monthly list of current periodicals
- New additions of books

**Web-OPAC Facility**: The users have been given *koha* Web OPAC access facilities on the Internet.

**Web Enable Library Services**: The library provides web enabled library service to users. The library web site contains information about the library its collection, services, rules, list of electronic journals, catalogues, databases, telephone directories, and online requisition forms etc. The contents of library web pages are regularly updated to serve the internal and external needs of users.

**Union Catalogue of Serials**: The Indian Statistical Institute Delhi Centre library has developed this Union Catalogue of Serials database with a view to promote the new improved access to journal holdings among the users. The database stored the serial holdings information of three ISI Libraries i.e. Kolkata, Delhi and Bangalore. The tool provides a web based central access point to all print and electronic journal holdings information and can be search under Journal title, Keywords, ISSN, Item types, Alphabetical browse (A-Z) or even Library wise serial holdings.

**Library, Bangalore**

Indian Statistical Institute Bangalore Centre Library is aiming to be identified as a model Library in the Indian Academic scenario. The Library is providing many modern Library Services using Internet and they are popularly known as Web based Information Services. ISI Bangalore Centre Library has also initiated interactive applications for its users. The Library has developed a very distinguished collection in different knowledge domains namely Mathematics, Statistics, Systems science, Information Science, Economics, Quality management and Operations Research, Library and Information Science, Computation and Artificial Intelligence and so on. Various services are designed to meet the Information needs of the Faculty members, Students, Research Scholars and Visiting Scientists. Walk-in users from other Research Institutes and Universities are also permitted to use the Library. The following activities were undertaken by the Library during the period April 2017 – March 2018:

**Collection Development**

The Library purchased 101 books, received 74 books as gift during this period. The Library subscribed to 153 journals titles, 6 journals titles were subscribed from NBHM grants. Additionally Library has
subscribed to “IEL ONLINE” giving access to journals and technical reports published by IEEE. The Library has 39 E-Books from World Scientific Publishing.

**Library Collection:** Total no. of books is 30,651 and bound volumes are 19607.

**Membership:** More than 160 registered users enjoyed the Library facilities and the services during the year. In addition, facilities were extended to around 380 walk-in users during this period.

**Current Content Service:** Content pages of around 1400 journals have been scanned.

**Circulation Service:** Around 6213 books and 360 journals were circulated during this period. 310 loose issues of journals were issued to users overnight.

**Inter-library Loan Service:** Due to good liaison amongst the local libraries, the library has been involving itself in providing Inter-library Loan Service.

**Document Delivery Service:** Under this service around 800 documents in pdf format were downloaded and supplied to the registered users.

**Reprographic Service:** During this period 21371 photocopies were supplied to the Library users.

**Web based Library Services:** The Library has devised various services using World Wide Web. They are all accessible at http://www.isibang.ac.in/library. Full-text online journals were accessed through this website. The Library also provides access to various abstracting and indexing services.

**Library, Chennai**

Academic Library for Indian Statistical Institute Chennai Centre (ISIC) was started in 2011 to cater to the information needs, adding to the existing library of SQC & OR unit, at Taramani. This evolving library aims to a vibrant collection in the fields of Statistics, Applied Statistics, Mathematics, Computer Science, Statistical Quality Control and Operation Research making it prototypical in functioning, administration and unique in collection. Various services are provided for an efficient usage of library facilities by the students, faculty members, visiting scientists and research scholars. Researchers from other institutions are offered reference service.

**Collection Development**

The Library maintains an excellent collection of books, journals, magazines, question papers, multimedia resources etc. From April 2017 till date, 155 books were added raising the collection to 3612 books. Library at SETS office was shifted and merged with ISI SQC & OR Unit library and the collected has increased above 5500. Around 21 International online journals and 10 magazines were subscribed. Further, during the reporting period Library received 526 books as donation by Prof. Sethuraman, Retired Professor from Indian Statistical Institute living in Florida, U.S.A.,

**Technical Processing**

Around 155 books were classified from April 2017 till date. Database entry in KOHA Library Automation software were updated in Z39.50 Standard bibliographic format for all the books. Web OPAC with accessibility and users’ details were updated in the library database. Other services like Inter-Library Loan, content service, reprography service and document delivery service are initiated.

**Web based library services**

It has remote access to more than 2000 e-journals accessible through ISI Kolkata Library procured under ISI Consortia.
Membership

ISIC library has restricted access to postgraduate students, research scholars, faculty members and visiting scientists totaling to around 35. Institutional Membership were renewed with Indian Institute of Technology, Madras (IITM) and Inter library Loan with other ISI Centers and Units were activated.

Library Services

Lending and document delivery service: Around 750 documents were delivered from April 2017 till date showing the active participation of the users. Automation of library with full setup of RFID was fully completed. Database was completed for ISI Chennai Centre Library, Taramani, SQC & OR Unit Library, Aminjikarai and ISI Chennai Centre Hostel library totaling to 5800 books. Full automation of library was completed.

Library, Tezpur

ISI N-E Centre Library started functioning from July 2011. The library aims to provide value services to its users by developing quality documents in the field of Statistics, Mathematics, Quantitative Economics and other allied subjects. The Library has good collection on the three main subjects. Further, it has limited collection in the fields of Computer Science, Soil Science, Library Science and Environmental Science etc. The ISI N-E Centre Library always tries to cater to the needs of user community.

The library installed the software KOHA in the year 2013 and then onwards all the circulation works are done through this software. In October 2015, ISI N-E Centre Library upgraded its KOHA version from 3.02 to 3.20.

Collection Development

ISI N-E Centre Library has an excellent collection of books, journals etc. In order to cater to the requirements of the user, the library has procured 82 new books in different fields during the 2017-18 session. Total number of books accessioned till date is 2758. The ISI N-E Centre Library also received 11 books from different sources as gift. All the purchased books are technically processed. The Library has 58 CDs of different reference books. The ISI N-E Centre Library has subscribed to 20 Indian and Foreign Journals and 5 Newspapers and 4 magazines during this period.

Membership

The main users of this Library are the students, faculty members, visiting scientists and staffs of the Institute. Total number of Library members in 2017-18 is 29. In addition, facilities were extended to around 50 users who participated in different workshops and seminars held in the institute.

Circulation Service: Around 600 books were circulated in this period.

Web Opac: Library members use this facility to browse and search the bibliographic database of the library and check the status of documents including their own transactions. The Library web page contains information about the Library, its collection, services, catalogue and list of Journals.

Current Awareness Service: Monthly book arrival list is regularly updated in the Library webpage.

Electronic Document Delivery Service: Under this service around 20 full-text articles and e-books in pdf format were downloaded and e-mailed to the students as per their requirement.
Research Activities

**Web Based Service:** Library has remote access to e-resources i.e., full-text and bibliographic databases from ISI Kolkata library website.

**Prasanta Chandra Mahalanobis Memorial Museum and Archives**

The Museum and Archives carried out regular upkeep programme for 921 exhibits through 101 panels and a collection of artifacts related to P. C. Mahalanobis displayed in the ground floor, Chatatal and Professor’s residence along with the pest control programme for the whole building of Amrapali. During this period 3130 sheets including books (17 nos.) and archival files (9 nos.) were treated. 568 files of untreated documents and 154 books has been listed.

Dspace software has been installed and 1167 items were uploaded on this software. Among the archival collections 62 Audio records are digitally converted. 1500 scanned documents are modified and 450 (approx.) slides were scanned.

Digitized cassettes and original cassettes has been accessioned. Museum artifacts and books of P.C.M’s study room has been accessioned and this works is continuing. A list of all almirahs of Museum and Archives has been prepared. Documents of 33 (nos.) archival files are indexed for software and converted in Pdf files. (Continuing) One file related to PCM & Tagore and two files of B.N.Seal are recorded. Some photographs are scanned and referential work had been done for Publication work.

Besides general visitors, eminent persons and scientists and students from colleges, Universities were among the visitors of the museum (383 approx.). Scholars and researchers from different field consulted our archival collection for reference (20 nos.).

**Center for Soft Computing Research: A National Facility, Kolkata**

**Moving Object Segmentation from Video Images**

Dey, B. and Kundu, M.K.

**Rough Sets in Video Tracking**

Chakraborty, D. and Pal, S.K.

**Moving Object Detection**

Subudhi, B.N. and Ghosh, A.

**Remote Sensing Image Analysis**

Datta, A. and Ghosh, A.

**Image Co-segmentation**

Bandyopadhyay, S. and Ghosh, A.

**Granular Computing**


**Network Mining**

Kundu, S. and Pal, S.K.

**Bio-informatics**
Research Activities

micro RNA Analysis

Cognitive Vision
Ghosh, K. and Mukherjee, A.

Multisensory Information Processing in Psychophysics
Ghosh, K, and Chandran, Keerthi

Information Processing Mechanism in Plants
Ghosh, K, Roy, S and Bal, B

Climate informatics and climate change
Chatterjee, C., Datta, S. and Das, S.

Computer and Statistical Services Centre, Kolkata

The IT infrastructures of the Institute were updated and maintained by the CSSC. The outlying Centres (Delhi, Chennai, Tezpur and Bengaluru) and the Giridhi Unit of the Institute are connected with Site-to-Site VPN (Virtual Private Network). The IT infrastructures of the Institute including server's virtualization (cloud), software [VMware (esxi and VCenter), Matlab, Mathematica, ArcGis, R etc], Network (wired and wifi), Network and Internet security, IP Telephones, Video conferencing facility, e-library and internet facilities (NKN - 1 gbps) were managed by the CSSC and used by all the Centers of the Institute as a LAN. The meetings including Academic Council meetings among the Institute's Centers (Delhi, Bengaluru, Chennai and Tezpur) and Giridhi Unit through Video Conferencing facilities were managed by the CSSC. The cloud infrastructure with virtualization software, Cisco UCS servers (304 cores/608 threads) and the EMC 260 TB storage were managed by the CSSC, providing the computing facility to the users of the Institute. The classes (M.Tech. in Computer Science and PGDA of ISI Tezpur) through video conferencing facilities were organized by the CSSC throughout the year. The Server of the accounting package FACT installed in ISI Kolkata was accessed from all outlying Centers and Units through the Site-to-Site VPN connections for maintaining the central accounts system of the Institute. The LAN (wired) connections in each of the rooms of all the hostels excluding ISEC in the Kolkata campus are connected to the Computer Center (CSSC) with 10 Gbs backbone. The wifi facility covering the ISEC hostel was maintained by the Center. The CSSC arranged to provide Laptops and Desktops to the faculties, scientific staff and research scholars of the Institute. The CSSC also arranged to provide technical support to the Institute by Computer Trainees trained by the CSSC.

Members of CSSC took part in teaching different courses of the Institute and also supervised project work of non-ISI students studying MCA, B.Tech. etc.
## 3. PROJECTS

### Internally Funded Projects

#### Ongoing Projects

<table>
<thead>
<tr>
<th>Sl. no.</th>
<th>Name of the project</th>
<th>Principal Investigator(s)</th>
<th>Unit(s) involved</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Theoretical Statistics and Mathematics Division</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Ashok Maitra Memorial Lectures on Probability</td>
<td>A. Bandyopadhyay &amp; K. Maulik</td>
<td>Stat-Math Unit, Delhi</td>
</tr>
<tr>
<td></td>
<td><strong>Applied Statistics Division</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Understanding the classification of various protein families and protein–protein interaction networks</td>
<td>P. Pal Choudhury</td>
<td>ASU, Kolkata</td>
</tr>
<tr>
<td>2.</td>
<td>Life and livelihood in areas affected by underground and open cast coal mining: A case study in Raniganj coalfields</td>
<td>D. Sengupta</td>
<td>ASU, Kolkata</td>
</tr>
<tr>
<td></td>
<td><strong>Computer and Communication Sciences Division</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>The Cops and robber game on graphs</td>
<td>S. Das</td>
<td>ACMU</td>
</tr>
<tr>
<td>2.</td>
<td>Massive Data Algorithm - Phase II</td>
<td>S. C. Nandy</td>
<td>ACMU</td>
</tr>
<tr>
<td>4.</td>
<td>Efficient Vertical handover techniques in heterogeneous Wireless networks (VHO)</td>
<td>S. C. Ghosh</td>
<td>ACMU</td>
</tr>
<tr>
<td>5.</td>
<td>Algorithms and Bounds for Dominating Set, Geodetic Set, and Obstacle Number in Graphs</td>
<td>A. Bishnu</td>
<td>ACMU</td>
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<tr>
<td>6.</td>
<td>Geometric Optimization Problem</td>
<td>S. Roy</td>
<td>ACMU</td>
</tr>
<tr>
<td>7.</td>
<td>GP-GPU Computing for Large Scale Networks (GPLN)</td>
<td>N. Das</td>
<td>ACMU</td>
</tr>
<tr>
<td>9.</td>
<td>A framework for Collaborative Application Execution for Mobile cloud Computing (MCC)</td>
<td>A. Banerjee</td>
<td>ACMU</td>
</tr>
<tr>
<td>10.</td>
<td>Multi-lingual Word Spotting</td>
<td>U. Pal</td>
<td>CVPRU</td>
</tr>
<tr>
<td>11.</td>
<td>Detection and Assessment of Image and Video Quality Degradation</td>
<td>S. Palit</td>
<td>CVPRU</td>
</tr>
<tr>
<td>12.</td>
<td>DEER: Document Engineering based Envisioning of Reading Behavior</td>
<td>U. Garain</td>
<td>CVPRU</td>
</tr>
<tr>
<td>13.</td>
<td>Information Retrieval from Microblogs</td>
<td>M. Mitra</td>
<td>CVPRU</td>
</tr>
<tr>
<td>14.</td>
<td>Study Towards an End-to-End Online Handwriting Recognition System</td>
<td>U. Bhattacharya</td>
<td>CVPRU</td>
</tr>
<tr>
<td>15.</td>
<td>Estimation of Ball Possession Statistics in Soccer Video</td>
<td>D.P. Mukherjee</td>
<td>ECSU</td>
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<tr>
<td></td>
<td>Project</td>
<td>Supervisor/Co-supervisor</td>
<td>Institution</td>
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<tr>
<td>17.</td>
<td>Transfer Learning: Neuro and Fuzzy Approaches</td>
<td>N.R. Pal</td>
<td>ECSU</td>
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<tr>
<td>18.</td>
<td>Event Recognition in the Video Captured in Uncontrolled Condition</td>
<td>P.P. Mohanta</td>
<td>ECSU</td>
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<tr>
<td>20.</td>
<td>Modeling Host-Pathogen Interactions</td>
<td>R.K. De</td>
<td>MIU</td>
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<tr>
<td>21.</td>
<td>Computational Methods to Integrate Microarray Data and Protein-Protein Interaction Networks for Disease Gene Identification</td>
<td>P. Maji</td>
<td>MIU</td>
</tr>
<tr>
<td>22.</td>
<td>Developing Algorithms for miRNA Expression Analysis in Cancer</td>
<td>S.S. Ray</td>
<td>MIU</td>
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<tr>
<td>23.</td>
<td>Computational Methods for Studying HIV-1 Pathogenicity in Humans: Analysis over Multiple Infection Stages, Mechanisms and Biomolecular Networks</td>
<td>S. Bandyopadyay</td>
<td>MIU</td>
</tr>
<tr>
<td>24.</td>
<td>Analyzing the structure and dynamics of large scale real world complex networks</td>
<td>Late C.A. Murthy (to be supervised by D.P. Mandal)</td>
<td>MIU</td>
</tr>
<tr>
<td>25.</td>
<td>Development of GPGPU base parallel algorithms for land cover classification of remotely sensed big data</td>
<td>B. Uma Shankar</td>
<td>MIU</td>
</tr>
<tr>
<td>27.</td>
<td>Binary code for the brain</td>
<td>K. Majumdar</td>
<td>CSU</td>
</tr>
</tbody>
</table>

**Physics and Earth Sciences Division**

<table>
<thead>
<tr>
<th></th>
<th>Project</th>
<th>Supervisor/Co-supervisor</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Oxygenation of the Proterozoic ocean</td>
<td>A. Banerjee</td>
<td>GSU</td>
</tr>
<tr>
<td>2.</td>
<td>Diversity, palaeobiogeography and palaeoecology of Miocene gastropods from India with special emphasis on Kutch, Gujarat</td>
<td>S.S. Das</td>
<td>GSU</td>
</tr>
<tr>
<td>3.</td>
<td>Archean greenstone belts in India – tectonics and sedimentation</td>
<td>D. Saha</td>
<td>GSU</td>
</tr>
<tr>
<td>4.</td>
<td>Gondwana vertebrates of peninsular India; a new perspective from field collection and morphometric data</td>
<td>D P. Sengupta</td>
<td>GSU</td>
</tr>
<tr>
<td>5.</td>
<td>Sedimentological and geochemical characteristics of the Late Triassic – Middle Jurassic formations in a Gondwana succession of Pranhita-Godavari Valley Basin – clues for changes in depositional environment and palaeoclimate</td>
<td>P. Ghosh</td>
<td>GSU</td>
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</table>

**Biological Sciences Division**

<table>
<thead>
<tr>
<th></th>
<th>Project</th>
<th>Supervisor/Co-supervisor</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Invasive alien species – a friend or a foe?</td>
<td>A. Dewanji</td>
<td>AERU</td>
</tr>
<tr>
<td>2.</td>
<td>Surface Functionalized Porous Nanomaterial Loaded Micronutrient Fertilizers for Gangetic Alluvial Soils</td>
<td>A. Goswami</td>
<td>AERU</td>
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### Projects

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<tr>
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<th>Title</th>
<th>Author</th>
<th>Unit</th>
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<tbody>
<tr>
<td>3.</td>
<td>Biochemical and physiological portrayal of Darjeeling tea cultivars towards the selection of superior clones against abiotic stress.</td>
<td>S. Das</td>
<td>AERU</td>
</tr>
<tr>
<td>4.</td>
<td>Exploring Potential of Sweet Sorghum (Sorghum bicolor L.) for Bio-Ethanol Production in West Bengal</td>
<td>S. Barik</td>
<td>AERU</td>
</tr>
<tr>
<td>5.</td>
<td>Fantastic yields in the system of rice intensification: fact or fallacy?</td>
<td>P. Banik</td>
<td>AERU</td>
</tr>
<tr>
<td>6.</td>
<td>Development of natural food preservatives from spices and herbs</td>
<td>R.R. Chattopadhyay</td>
<td>AERU</td>
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<tr>
<td>7.</td>
<td>Host-parasite interaction between the rice root knot nematode (Meloidogyne graminicola) and rice</td>
<td>A. Mukherjee</td>
<td>AERU</td>
</tr>
<tr>
<td>8.</td>
<td>Utilization of Brick factory coal ash and fly ash through application of vermitechnology</td>
<td>P. Bhattacharyya</td>
<td>AERU</td>
</tr>
<tr>
<td>9.</td>
<td>Candencing photosystem II with naturally occurring CaMn₄O₅ nano-cluster and nano particles of hematite (α – Fe₂O₃)</td>
<td>A. Goswami</td>
<td>AERU</td>
</tr>
<tr>
<td>10.</td>
<td>Sterculiafoetida, L.– Eco-friendly, cost effective and rich sources of nutritious edible oil, animal food supplements as well as biofuel and its multimodal application to environmental perspectives</td>
<td>S. Mandal Biswas</td>
<td>AERU</td>
</tr>
<tr>
<td>12.</td>
<td>Whole exome somatic mutation analysis in oral cancer and adjacent leukoplakia tissues: A study to understand progression of oral leukoplakia to cancer</td>
<td>B. Roy</td>
<td>HGU</td>
</tr>
<tr>
<td>13.</td>
<td>Genetic Mapping of rare variants, multivariate and longitudinal phenotypes</td>
<td>S. Ghosh</td>
<td>HGU</td>
</tr>
<tr>
<td>14.</td>
<td>On integrating several data sources in genetic association study</td>
<td>I. Mukhopadhyay</td>
<td>HGU</td>
</tr>
<tr>
<td>15.</td>
<td>Role of epigenetics in psoriasis: Identification of DNA methylation biomarker</td>
<td>R. Chatterjee</td>
<td>HGU</td>
</tr>
</tbody>
</table>

### Social Sciences Division

<table>
<thead>
<tr>
<th></th>
<th>Title</th>
<th>Author</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Safe School Survey</td>
<td>D.D. Roy</td>
<td>Psychology Research Unit</td>
</tr>
<tr>
<td>3.</td>
<td>Separation of information streams in face image processing</td>
<td>G. Chatterjee</td>
<td>Psychology Research Unit &amp; CVPRU</td>
</tr>
<tr>
<td></td>
<td>Title</td>
<td>Authors</td>
<td>Institution</td>
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<tr>
<td>6</td>
<td>Female Employment: Soil Endowment and Agriculture Technology</td>
<td>F. Afridi &amp; K. Mahajan (Ambedkar University Delhi)</td>
<td>EPU</td>
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<tr>
<td>7</td>
<td>Conditional Aid as a Tools for Aid Selectivity</td>
<td>P. Roy Chowdhury, P. Bag (National University of Singapore) &amp; K. Dam (CIDE, Mexico)</td>
<td>EPU</td>
</tr>
<tr>
<td>8</td>
<td>Fairness is Flexible</td>
<td>P. Kothari, S. Banerjee (Queensland University of Technology and University of Melbourne) &amp; P. Roy Chowdhury</td>
<td>EPU</td>
</tr>
<tr>
<td>9</td>
<td>The Effect of Leaded Petrol on Crime Rates in India</td>
<td>E. Somanathan &amp; A. Mukhopadhyay</td>
<td>EPU</td>
</tr>
<tr>
<td>10</td>
<td>Public Goods Provision and Political Competition</td>
<td>F. Afridi, A. Dhillon (King’s College, London), A. Roy Chaudhuri &amp; E. Solan (School of Mathematical Sciences, Tel Aviv University)</td>
<td>EPU</td>
</tr>
<tr>
<td>11</td>
<td>An economic analysis of alternative treatment methods of ovarian cancer in India: An appraisal of economic burden, quality of life and mortality risk</td>
<td>P. Roy Chowdhury, A. Mukhopadhyay (Tata Medical Centre), Z. Husain (IIT Kgp), M. Datta (Presidency Univ.), I. Roy Chowdhury (JNU), J. Bhaumik (TMC)</td>
<td>EPU</td>
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</table>
### Completed Projects

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the project</th>
<th>Principal Investigator(s)</th>
<th>Unit(s) involved</th>
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<tr>
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<td></td>
<td><strong>Theoretical Statistics and Mathematics Division</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>ISI-Networks International Conference on Probability &amp; its applications</td>
<td>K. Maulik</td>
<td>Stat-Math Unit, Kolkata</td>
</tr>
<tr>
<td>2.</td>
<td>Ashok Maitra Memorial Lectures on Probability</td>
<td>A. Bandyopadhyay &amp; K. Maulik</td>
<td>Stat-Math Unit, Delhi &amp; Kolkata</td>
</tr>
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<tr>
<td></td>
<td><strong>Applied Statistics Division</strong></td>
<td></td>
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<tr>
<td>1.</td>
<td>Weight Selection in Multiple Hypothesis Testing</td>
<td>K. Das</td>
<td>ISRU</td>
</tr>
<tr>
<td>2.</td>
<td>Development of Methodologies Towards Robust Reading of Old Degraded Bangla Printed Documents</td>
<td>S.K. Parui</td>
<td>CVPRU</td>
</tr>
<tr>
<td>3.</td>
<td>Tracking of Moving Objects from Video Scenes using Pattern Classifiers</td>
<td>A. Ghosh</td>
<td>MIU</td>
</tr>
<tr>
<td>4.</td>
<td>Indian Language Spoken Document Retrieval</td>
<td>D.P. Mandal</td>
<td>MIU</td>
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<td></td>
<td>Projects</td>
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<tr>
<td>5.</td>
<td>Computational Model of Brightness Perception in Images.</td>
<td>K. Ghosh</td>
<td>MIU</td>
</tr>
</tbody>
</table>

**Physics and Earth Sciences Division**

1. Sedimentology and stratigraphy of the Siwalik succession of eastern Himalaya and its bearing on the evolution of the Neogene foreland basin in the eastern Himalaya
   - T. Chakraborty
   - GSU

2. A study of the Neogene and Quaternary successions of eastern Himalayan foreland basin
   - T. Chakraborty
   - GSU

3. Evolution of dolomite formations in the Cuddapah basin: Numerical estimation constrained by field proxies
   - A. Banerjee
   - GSU

4. Tectonostratigraphic evolution of the Sonakhan Greenstone Belt: A link between Archean greenstones and younger cratonic basins
   - S. Patranabis-Deb
   - GSU

5. Implications of biotic events present within the Mesozoic non-marine vertebrates of the Gondwana basins of peninsular India
   - D.P. Sengupta & S. Bandyopadhyay
   - GSU

6. Turbulence phenomena due to combined wave current flows over objects
   - S. Ghosh
   - PAMU

7. Live-bed scour around Bridge abutment
   - S. Sarkar
   - PAMU

8. Live-bed scour around Bridge pier
   - S. Sarkar
   - PAMU

9. Conference on Frontiers of Statistical Physics
   - B. Basu & S.K. Maiti
   - PAMU

**Biological Sciences Division**

1. Phytonematode problems of rice in Jharkhand: density, diversity and pathogenesis
   - A. Mukherjee
   - AERU

2. Biorational management of rice pests and diseases: evaluation of nanoparticle based and endophyte-mediated approaches
   - A. Mukherjee
   - AERU

3. Study of soil carbon dynamics through integrated nutrient management in different agroecosystems of Assam
   - P. Bhattacharyya
   - AERU

4. Parallel analysis of transport of contaminants in soil-plant systems in different soil types of eastern India: a sustainable approach
   - P. Bhattacharyya
   - AERU

5. A Study on Sweet Sorghum (*Sorghum bicolor* L.) Crop using different fertility levels at different locations in West Bengal for maximization of crop production to obtain increased bio-fuel yield
   - S. Barik
   - AERU

6. Determination of functional response under selective predation through experimentation and modeling
   - J. Chattopadhyay & S. Bhattacharya
   - AERU

7. Health status and Survival Strategy of the tea garden labourers of locked tea gardens of Jalpaiguri district, West Bengal
   - S.K. Roy
   - BAU
<table>
<thead>
<tr>
<th>No.</th>
<th>Project Title</th>
<th>Authors/Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.</td>
<td>Living with Age: An Investigation on the Urban Poor Elderly Women</td>
<td>S. Mukhopadhyay</td>
</tr>
<tr>
<td>9.</td>
<td>Identification of epigenetic biomarkers in the cell free nucleic acids of the Oral Potentially Malignant Disorder (OPMD) and Oral Squamous Cell Carcinoma (OSCC) patients from eastern India</td>
<td>R. Chatterjee</td>
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<tr>
<td></td>
<td><strong>Social Sciences Division</strong></td>
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</tr>
<tr>
<td>1.</td>
<td>Bangla Pronunciation Dictionary</td>
<td>N.S. Dash</td>
</tr>
<tr>
<td>2.</td>
<td>Contract farming participation and emerging in agrarian relation: A case of potato growers in West Bengal</td>
<td>H. C. Behera</td>
</tr>
<tr>
<td>3.</td>
<td>Backward linkages in the provision of education: Effect of tertiary education on schooling</td>
<td>A. Mukhopadhyay, S. Bhattacharjee (SNU) &amp; N. Chaddha (SNU)</td>
</tr>
<tr>
<td>4.</td>
<td>What drives career choice in urban India?</td>
<td>A. Mukhopadhyay, T. Jain (ISB) &amp; N. Prakash (U. Conn)</td>
</tr>
<tr>
<td>5.</td>
<td>Linear correlation, basis risk and the design of index based crop insurance.</td>
<td>B. Ramaswami &amp; D. Singh Negi</td>
</tr>
<tr>
<td>6.</td>
<td>Why is the aggregate demand side channel of monetary transmission weak in India?</td>
<td>C. Ghate, P. Basu (Durham), P. Gopalakrishnan (RBI), S. Banerjee (CSSSC) &amp; S. Gupta</td>
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<tr>
<td>8.</td>
<td>Identity, Networks and Labor Productivity</td>
<td>F. Afridi, A. Dhillon (King’s College) &amp; S. Xin Li (University of Texas, Dallas)</td>
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<tr>
<td>9.</td>
<td>Simultaneous Borrowing and Saving in Microfinance</td>
<td>P. Roy Chowdhury &amp; D. Dasgupta</td>
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### Projects

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<tr>
<th>Sl. no.</th>
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<th>Principal Investigator(s)</th>
<th>Unit(s) involved</th>
<th>Funded by</th>
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<tr>
<td>11.</td>
<td>Council Characteristics of Gram Panchayats and Local Public Good Provision</td>
<td>B. Ramaswami &amp; S. Das (Yale University)</td>
<td>EPU</td>
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<td>12.</td>
<td>Impact of Expanding Choices on Household Calorie Consumption in India</td>
<td>T. Ray and A. Das Gupta (ISI Delhi)</td>
<td>EPU</td>
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### Statistical Quality Control and Operations Research Division

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<th>Unit(s) involved</th>
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<tbody>
<tr>
<td>1.</td>
<td>Problems and Prospects of Tea Industry in India</td>
<td>A.R. Mukhopadhyay</td>
<td>SQC &amp; OR Unit, Kolkata</td>
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<td>2.</td>
<td>Modelling multistage Process Monitoring and Fault Detection Strategies under Partial and Imprecise Information</td>
<td>P. Das</td>
<td>SQC &amp; OR Unit, Kolkata</td>
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<td>3.</td>
<td>Workshop on Statistical Techniques for Research Methodology</td>
<td>A. Sarkar</td>
<td>SQC &amp; OR Unit, Mumbai &amp; Chennai</td>
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### Externally Funded Projects

#### Ongoing Projects

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<th>Unit(s) involved</th>
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<tbody>
<tr>
<td>1.</td>
<td>J.C. Bose Fellowship</td>
<td>D. Goswami</td>
<td>Stat-Math Unit, Kolkata</td>
<td>DST</td>
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<tr>
<td>2.</td>
<td>J.C. Bose Fellowship</td>
<td>A. Bose</td>
<td>Stat-Math Unit, Kolkata</td>
<td>DST</td>
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<tr>
<td>3.</td>
<td>Risk Analysis, Ruin and Extremes (RARE)</td>
<td>K. Maulik &amp; P. Roy</td>
<td>Stat-Math Unit, Kolkata</td>
<td>Marie Curie Research Staff Exchange Fellowship from the 7th European Community Framework Programme</td>
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<td>4.</td>
<td>Microsoft Research India: Unrestricted Research Grant</td>
<td>K. Maulik &amp; A. Banerjee</td>
<td>Stat-Math Unit, Kolkata &amp; ACMU</td>
<td>Microsoft Research India</td>
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<td>5.</td>
<td>Workshop on Analytic Number Theory</td>
<td>S. Ganguly &amp; R. Munshi</td>
<td>Stat-Math Unit, Kolkata</td>
<td>NCM</td>
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<td>Project Description</td>
<td>Team Members</td>
<td>Organization/Institute</td>
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<td>6</td>
<td>Problems in Affine Algebraic Geometry</td>
<td>N. Gupta</td>
<td>Stat-Math Unit, Kolkata</td>
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<td>7</td>
<td>Networks conference on Probability</td>
<td>K. Maulik</td>
<td>Stat-Math Unit, Kolkata</td>
<td>DAE</td>
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<td>8</td>
<td>Lectures in Probability and Stochastic Processes XII</td>
<td>A. Chakraborty &amp; R.S. Hazra</td>
<td>Stat-Math Unit, Kolkata</td>
<td>DAE</td>
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<tr>
<td>9</td>
<td>BOBASIO Region Airspace Safety Assessment Study</td>
<td>A. Bandyopadhyay &amp; D. Sarkar</td>
<td>Stat-Math Unit, Delhi</td>
<td>Airport Authority of India</td>
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<tr>
<td>10</td>
<td>J.C. Bose Fellowship</td>
<td>R.B. Bapat</td>
<td>Stat-Math Unit, Delhi</td>
<td>DST, Govt. of India</td>
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<tr>
<td>11</td>
<td>Sums of integers Fourier, combinatorics, computation</td>
<td>S. Laishram</td>
<td>Stat-Math Unit, Delhi</td>
<td>Ministry of Defence, Govt. of India</td>
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<td>12</td>
<td>Implementation of the Attacks on Elliptic Curve Discrete Log Problem</td>
<td>S. Laishram</td>
<td>Stat-Math Unit, Delhi</td>
<td>Ministry of Defence, Govt. of India</td>
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<tr>
<td>13</td>
<td>$E_0$-semigroups: classification and invariants</td>
<td>B.V. Rajarama Bhat &amp; D. Markiewicz</td>
<td>Stat-Math Unit, Bangalore</td>
<td>UGC</td>
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<td>14</td>
<td>Uniqueness for Stochastic Partial Differential Equations</td>
<td>S. Athreya &amp; L. Mytnik</td>
<td>Stat-Math Unit, Bangalore</td>
<td>UGC</td>
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<td>15</td>
<td>Etale Fundamental groups</td>
<td>M. Kumar &amp; L. Bary-Soroker</td>
<td>Stat-Math Unit, Bangalore</td>
<td>UGC</td>
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<tr>
<td>16</td>
<td>Mathematical Examination of a Load Forecasting Model - Part II</td>
<td>M. Delampady, B.V. Rajarama Bhat, V.R. Padmawar &amp; Soumen Dey</td>
<td>Stat-Math Unit, Bangalore</td>
<td>Hitachi India Limited, Bangalore</td>
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<td>17</td>
<td>J.C. Bose Fellowship project</td>
<td>B. V. Rajarama Bhat</td>
<td>Stat-Math Unit, Bangalore</td>
<td>Science and Engineering Research Board</td>
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<td>18</td>
<td>$n$-tuples of commuting Isometries</td>
<td>J. Sarkar</td>
<td>Stat-Math Unit, Bangalore</td>
<td>DST</td>
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**Applied Statistics Division**

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<th>Project Description</th>
<th>Team Members</th>
<th>Organization/Institute</th>
<th>Funding Body</th>
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<tbody>
<tr>
<td>1</td>
<td>International Passenger Survey</td>
<td>A. Sen Gupta</td>
<td>ASU, Kolkata</td>
<td>Ministry of Tourism, Govt. of India</td>
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<td>2</td>
<td>Methodological Study Towards Compilation and Forecasting of Services Trade Statistics</td>
<td>A. Sen Gupta</td>
<td>ASU, Kolkata</td>
<td>DGCI&amp;S, Ministry of Commerce and Industry, Govt. of India</td>
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<tr>
<td>3</td>
<td>Changes in pattern of irrigation, cultivation and livelihood of rural Bengal: The experience of Jamalpur block of Bardhaman</td>
<td>D. Sengupta</td>
<td>ASU, Kolkata</td>
<td>DST, Govt. of West Bengal</td>
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<td>4.</td>
<td>Indo-German DST Project</td>
<td>M. Nandi &amp; S. Chatterjee</td>
<td>ASU, Kolkata</td>
<td>IISc, Bangalore</td>
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<td>5.</td>
<td>Changes in pattern of irrigation, cultivation and livelihood of rural Bengal: The experience of Jamalpur block of Bardhaman</td>
<td>D. Sengupta</td>
<td>ASU, Kolkata</td>
<td>DST, Govt. of West Bengal</td>
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<td>6.</td>
<td>Critical Appraisal and Methodological Recommendations on TV-Viewership Study(CAMROTS)</td>
<td>A. Sen Gupta</td>
<td>ASU, Kolkata</td>
<td>BAARC</td>
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<td>7.</td>
<td>Survey for Studying the efficacy and impact of NATs</td>
<td>S. Purkaysstha</td>
<td>ASU, Kolkata</td>
<td>Board of Practical Training (ER). Under Ministry of HRD, Govt. of India</td>
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<td>8.</td>
<td>Cryptography &amp; Cryptanalysis</td>
<td>S. Maitra</td>
<td>ASU, Kolkata</td>
<td>Department of Atomic Energy (DAE), Board of Research in Nuclear Sciences, Govt. of India</td>
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**Computer and Communication Sciences Division**

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<tbody>
<tr>
<td>1.</td>
<td>Design for Manufacturability aware Global Routing</td>
<td>S. Sur-Kolay</td>
<td>ACMU</td>
<td>IBM, USA</td>
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<td>2.</td>
<td>A Framework for Response Time Analysis for Embedded Programs on Modern Processors</td>
<td>A. Banerjee</td>
<td>ACMU</td>
<td>Advanced Systems Lab Hyderabad, DRDO, Govt. of India</td>
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<td>3.</td>
<td>Binary Analysis for Software Security</td>
<td>A. Banerjee</td>
<td>ACMU</td>
<td>Scientific Analysis Group, DRDO, Govt. of India</td>
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<td>4.</td>
<td>Approximate Computing Techniques for Robotics</td>
<td>A. Banerjee</td>
<td>ACMU</td>
<td>Tata Consultancy Services Innovation Labs</td>
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<td>5.</td>
<td>Real-time end-to-end Text Detection and Recognition in the Wild</td>
<td>U. Pal</td>
<td>CVPRU</td>
<td>Ministry of Higher Education, Scientific Research of The Republic of Tunisia &amp; DST, Govt. of India</td>
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<td>6.</td>
<td>Planogram Image Matching</td>
<td>D.P. Mukherjee</td>
<td>ECSU</td>
<td>TCS</td>
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<td>7.</td>
<td>National Post Doctoral Fellowship</td>
<td>J. Dasgupta</td>
<td>ECSU</td>
<td>SERB</td>
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<td>8.</td>
<td>Information Access from Document Images of Indian Languages</td>
<td>B. Chanda</td>
<td>ECSU</td>
<td>MHRD</td>
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<td>Project Number</td>
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<td>Funding Agency</td>
<td>Institution</td>
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<td>9.</td>
<td>Identification of Bainite and Martensite from Steel Micrographs – Phase II</td>
<td>P. Das &amp; D.P. Mukherjee</td>
<td>SQC &amp; OR Unit, Kolkata &amp; ECSU</td>
<td>Tata Steel</td>
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<td>10.</td>
<td>Systems and Methods for Object Recognition Based Estimation of Plannogram Compliance</td>
<td>D.P. Mukherjee</td>
<td>ECSU</td>
<td>TCS</td>
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<tr>
<td>11.</td>
<td>MOBILE+ project: a network project involving various Indian and European Institutes</td>
<td>A Ghosh</td>
<td>MIU</td>
<td>European Commission</td>
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<tr>
<td>12.</td>
<td>Recognition of Antinuclear Antibodies by Automated HEP-2 Cell IIF Image Analysis for Diagnosis of Connective Tissue Disease</td>
<td>P. Maji</td>
<td>MIU</td>
<td>DST, Govt. of India</td>
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<td>14.</td>
<td>Copula Functions in Analysis of Single Cell Gene Expression Data</td>
<td>S. Bandyopadhyay</td>
<td>MIU</td>
<td>DST (JC Bose Fellowship Project)</td>
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<td>15.</td>
<td>Multi-dimensional Research to Enable Systems Medicine: Acceleration Using a Cluster Approach</td>
<td>S. Bandyopadhyay</td>
<td>MIU</td>
<td>Department of Biotechnology</td>
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<td>16.</td>
<td>Analysis of Biological Network through discovery of Colored Motifs</td>
<td>S. Bandyopadhyay</td>
<td>MIU</td>
<td>DST-SERB, Govt. of India</td>
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<td>17.</td>
<td>Land Cover Classification of Remote Sensing Images Using Granular Computing Methodologies</td>
<td>Saroj K. Meher</td>
<td>SSIU</td>
<td>DST, Govt. of India</td>
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<td>18.</td>
<td>Quantitative Characterization of Complex Topologically Prominent Components of Porous Media derived from Rocks of Petrologic Significance via Mathematical Morphology and Fractal Geometry</td>
<td>B.S. Daya Sagar</td>
<td>SSIU</td>
<td>ISRO-Chandrayaan, Govt. of India</td>
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<td>19.</td>
<td>Quantitative Morphologic and Scaling Analyses of Lunar Digital Elevation Models (LDEM) Derived from TMC Data of Chandrayaan-1 Mission via Mathematical Morphology and Fractal Geometry</td>
<td>B.S. Daya Sagar</td>
<td>SSIU</td>
<td>ISRO-Chandrayaan, Govt. of India</td>
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<td>20.</td>
<td>Quantification of neural information and subsequent coding scheme</td>
<td>K. Majumdar</td>
<td>SSIU</td>
<td>DBT</td>
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</table>
### Projects

21. **Automatic detection of micro-seizures and a study on how they evolve into macro-seizures**
   - K. Majumdar & F. Mormann (Department of Epileptology, University of Bonn, Germany)
   - SSIIU
   - **DBT & German Ministry of Education**

22. **Cisco Grant**
   - S. Ruj
   - CSRU
   - **Cisco Systems Inc.**

23. **NetApp Faculty Fellowship**
   - S. Ruj
   - CSRU
   - **NetApp Inc. USA**

24. **Samsung GRO**
   - S. Ruj
   - CSRU
   - **Samsung Electronics, Kores**

25. **Cryptanalysis of Symmetric Cipher Algorithms**
   - G. Paul
   - CSRU
   - **BARC, DAE, India**

### Physics and Earth Sciences Division

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<th>Principal Investigator(s)</th>
<th>Institution(s)</th>
<th>Funding Agency</th>
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<tbody>
<tr>
<td>1. Sedimentary models of Precambrian Ergs in Brazil and India (Sept 2017 – August 2019)</td>
<td>G. Basilici &amp; T. Chakraborty</td>
<td>University of Campinas &amp; GSU</td>
<td><strong>FAPESP, Brazil</strong></td>
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<tr>
<td>2. Systematics, Palaeobiogeography and change in diversity of Tertiary Gastropoda of Kutch, Gujarat</td>
<td>S.S. Das</td>
<td>GSU</td>
<td><strong>SERB, DST, Govt. of India</strong></td>
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<tr>
<td>3. New Statistical Techniques to Identify Modified Gravity as the Source of Cosmic Acceleration</td>
<td>U. Alam</td>
<td>PAMU</td>
<td><strong>DST</strong></td>
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<tr>
<td>4. Quest for Dark Matter and Inflation</td>
<td>A. Chatterjee</td>
<td>PAMU</td>
<td><strong>DST</strong></td>
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<tr>
<td>5. Some Current Quantum Mechanical Problems in Linear and Nonlinear Quantum Systems</td>
<td>A. Sinha</td>
<td>PAMU</td>
<td><strong>DST</strong></td>
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<tr>
<td>6. Macroscopic dynamics in ensembles of dynamical systems: some challenging issues</td>
<td>D. Ghosh</td>
<td>PAMU</td>
<td><strong>DST</strong></td>
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### Biological Sciences Division

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<tbody>
<tr>
<td>1. Surface functionalized solid and phytochemical loaded mesoporous nanomaterials for mosquito vector control</td>
<td>A. Goswami</td>
<td>AERU</td>
<td><strong>DBT, Govt. of India</strong></td>
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<tr>
<td>2. Modulation and demodulation of photosynthesis using nanoparticles</td>
<td>A. Goswami</td>
<td>AERU</td>
<td><strong>DST, Govt. of India</strong></td>
</tr>
<tr>
<td>3. Identification of Genetic and Epigenetic Associations Among Psoriasis patients in India</td>
<td>R. Chatterjee</td>
<td>HGU</td>
<td><strong>SERB, DST, Govt. of India</strong></td>
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<td>4. Identification of the contribution of Human Leukocyte Antigen (HLA) alleles and functional coding variants to the risk of psoriasis in patients from West Bengal</td>
<td>R. Chatterjee</td>
<td>HGU</td>
<td><strong>DBT, Govt. of WB</strong></td>
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# Projects

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<tr>
<td>5.</td>
<td>A Comprehensive Genomic and genetic characterization of Pancreatic Cancer patients in Indian Population</td>
<td>N. Sikdar (Ramalingaswamy Fellow)</td>
<td>HGU</td>
<td>DBT, Govt. of India</td>
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<td>6.</td>
<td>Ramanujan Fellowship Grant</td>
<td>S. Datta (Ramanujan Fellow)</td>
<td>HGU</td>
<td>DST, Govt. of India</td>
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## Social Sciences Division

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<th>Funding Agency</th>
<th>Institution</th>
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<tbody>
<tr>
<td>1.</td>
<td>Updatation of District Human Development Report, Hooghly</td>
<td>A. Majumder &amp; C. Neogi</td>
<td>ERU</td>
<td>Jacobs Foundation</td>
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<td>2.</td>
<td>Gender Violence in India: Its Roots, Nature and Extent</td>
<td>C. Sharma Biswas</td>
<td>ERU</td>
<td>ICSSR, Govt. of India</td>
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<td>3.</td>
<td>Children’s World: International Survey on Children’s Well-being</td>
<td>S. Das</td>
<td>ERU</td>
<td>DST, INSA</td>
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<td>4.</td>
<td>Baseline survey project of Development of Horticulture in Paschimanchal districts</td>
<td>M. Pal</td>
<td>ERU &amp; SRU</td>
<td>Government of West Bengal</td>
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<tr>
<td>5.</td>
<td>The cognitive architecture of face-processing – understanding the separation of information streams</td>
<td>G. Chatterjee</td>
<td>PRU</td>
<td>DST, INSA</td>
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<tr>
<td>6.</td>
<td>Reviewing the existing system of compilation of trade indices</td>
<td>N. Chattopadhyay</td>
<td>SOSU</td>
<td>DGCI &amp; S, Govt. of India</td>
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<td>7.</td>
<td>IGP Project on evaluating the framework of various tests conducted</td>
<td>N. Chattopadhyay</td>
<td>SOSU</td>
<td>Tata Consultancy Services Limited (TCS ion)</td>
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<td>8.</td>
<td>Design and Conc. Evaluation of Foreign Trade Policy</td>
<td>S. Mitra</td>
<td>SOSU</td>
<td>DGCI &amp; S, Govt. of India</td>
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<tr>
<td>9.</td>
<td>Statistics and its applications for RBI Officers</td>
<td>N. Chattopadhyay</td>
<td>SOSU</td>
<td>Reserve Bank Of India</td>
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<tr>
<td>10.</td>
<td>Manchester University-ISI Project on Political Economy</td>
<td>N. Chattopadhyay</td>
<td>SOSU</td>
<td>ESRC Grant, Manchester University</td>
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<td>11.</td>
<td>Socio-Economic Impact of National Highways</td>
<td>N. Chattopadhyay</td>
<td>SOSU</td>
<td>National Highways Authority of India</td>
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<tr>
<td>13</td>
<td>Developing an Appropriate Methodology for Estimating Proportion of Villages with Specific Infrastructural Facility</td>
<td>N. Chattopadhyay</td>
<td>SOSU</td>
<td>M.O.S.&amp; P.I., Govt. of India</td>
</tr>
<tr>
<td>14</td>
<td>UNDP consultancy assignment for development of Disaster Score Card for India: development of Disaster Risk Index for the districts/ States/UTs and Disaster Resilience Index</td>
<td>N. Chattopadhyay</td>
<td>SOSU</td>
<td>UNDP</td>
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<tr>
<td>15</td>
<td>Centre for research on the Economics of Climate, Food, Energy and Environment (CECFEE)</td>
<td>E. Somanathan</td>
<td>EPU</td>
<td>Environment for Development (EoF) Initiative</td>
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<tr>
<td>16</td>
<td>Strengthening livelihood opportunity for the forest dwellers in Jharkhand and Odisha</td>
<td>H.C. Behera</td>
<td>SRU Giridih</td>
<td>Ministry of Tribal Affairs, Govt. of India</td>
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</table>

**Statistical Quality Control and Operations Research Division**

<table>
<thead>
<tr>
<th>No.</th>
<th>Project Description</th>
<th>Team Members</th>
<th>Organization</th>
<th>Funding Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Development of Quality System – Ordnance Factory, Ambajhari, Nagpur</td>
<td>R. Sett &amp; A. Bandyopadhyay</td>
<td>SQC &amp; OR Unit, Kolkata</td>
<td>Ordnance Factory</td>
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<tr>
<td>2</td>
<td>Comprehensive Training Programme on Quality System Development at 5 OFs</td>
<td>A. Bandyopadhyay &amp; R. Sett</td>
<td>SQC &amp; OR Unit, Kolkata &amp; Hyderabad</td>
<td>Ordnance Factory</td>
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<tr>
<td>3</td>
<td>Normalization of Marks with Admission Committee for Professional courses</td>
<td>A.K. Chakraborty</td>
<td>SQC &amp; OR Unit, Kolkata</td>
<td>Govt. of Gujarat</td>
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<td>4</td>
<td>Baseline Survey at LWSIT</td>
<td>R. Sett</td>
<td>SQC &amp; OR Unit, Kolkata</td>
<td>LWSIT</td>
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<tr>
<td>5</td>
<td>DFSS GB Pgms</td>
<td>K.K. Chowdhury</td>
<td>SQC &amp; OR Unit, Bangalore</td>
<td>TVSM Hosur.</td>
</tr>
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<td>6</td>
<td>Statistical Techniques for Quality Control</td>
<td>U.H. Acharya</td>
<td>SQC &amp; OR Unit, Bangalore</td>
<td>FIAT Ltd. Pune.</td>
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<td>7</td>
<td>NVT Quality Certification</td>
<td>P.K. Perumallu</td>
<td>SQC &amp; OR Unit, Bangalore</td>
<td>NVT QC</td>
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<tr>
<td>8</td>
<td>Training &amp; Consultancy in Design of Experiments</td>
<td>B. John K.K. Chowdhury</td>
<td>SQC &amp; OR Unit, Bangalore</td>
<td>Toyota Industries Engine India Pvt Ltd</td>
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<tr>
<td>9</td>
<td>Foundation Course on Business Analytics using R</td>
<td>B. John K.K. Chowdhury</td>
<td>SQC &amp; OR Unit, Bangalore</td>
<td>Tesco</td>
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<tr>
<td>10</td>
<td>Six Sigma Training &amp; Implementation</td>
<td>S. Ray</td>
<td>SQC &amp; OR Unit, Bangalore</td>
<td>Mother Dairy Fruits &amp; Vegetables, Delhi</td>
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<td>Project</td>
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<td>Organizational Unit</td>
<td>Location</td>
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<td>11. Six Sigma Training &amp; Implementation</td>
<td>S. Ray</td>
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<td>Du, Dubai</td>
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<td>12. Program on Advanced Statistical Techniques</td>
<td>B. John K.K. Chowdhury</td>
<td>SQC &amp; OR Unit, Bangalore</td>
<td>Altran Technologies</td>
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<td>13. Certification Program on Six Sigma Green Belt</td>
<td>B. John K.K. Chowdhury</td>
<td>SQC &amp; OR Unit, Bangalore</td>
<td>UltraTech Cement Gulbarga</td>
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<tr>
<td>14. Foundation Course on Business Analytics</td>
<td>B. John K.K. Chowdhury</td>
<td>SQC &amp; OR Unit, Bangalore</td>
<td>Tata Steel, Jamshedpur</td>
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<td>15. Certification Program on Six Sigma Green Belt</td>
<td>B. John K.K. Chowdhury</td>
<td>SQC &amp; OR Unit, Bangalore</td>
<td>Gujarat Cement Works, Amreli, Gujarat</td>
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<td>16. Foundation Course on Business Analytics</td>
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<td>Ernst &amp; Young</td>
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<td>17. Certification Program on Six Sigma Green Belt</td>
<td>B. John K.K. Chowdhury</td>
<td>SQC &amp; OR Unit, Bangalore</td>
<td>Rajshree Cement Works, Gulbarga</td>
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<td>18. Quality System Development of Ordnance Factories at OFMK, Medak</td>
<td>A. Bandhyopadhyay &amp; G Murali Rao, A.L.N. Murthy</td>
<td>SQC &amp; OR Unit, Kolkata &amp; Hyderabad</td>
<td>Ordnance Factory, Ministry of Defence, Govt. of India</td>
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<td>19. Certification program on Business Analytics and Data Mining</td>
<td>A. Sarkar</td>
<td>SQC &amp; OR Unit, Mumbai</td>
<td>Participants</td>
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<td>20. Six Sigma Green Belt Program</td>
<td>S. Sikder</td>
<td>SQC &amp; OR Unit, Pune</td>
<td>Controllet of Naval Arm Inspection (W)</td>
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<td>21. DFSS Deployment</td>
<td>S. Rath</td>
<td>SQC &amp; OR Unit, Pune</td>
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<td>22. Six Sigma Black-Belt</td>
<td>S. Rath</td>
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<td>23. Six Sigma Master Black-Belt</td>
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<td>SQC &amp; OR Unit, Pune</td>
<td>Participants</td>
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<td>24. Data Analytic Program</td>
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<td>Participants</td>
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<td>25. Six Black-Belt Program</td>
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<td>SQC &amp; OR Unit, Pune</td>
<td>Vodafone, Pune</td>
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<td>26. Six Sigma Deployment Program</td>
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<td>SQC &amp; OR Unit, Pune</td>
<td>TACO Group</td>
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<tr>
<td>Sl. no.</td>
<td>Name of the project</td>
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<td>Unit(s) involved</td>
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<td>1.</td>
<td>Exponential Diophantine Equations: Resolution of some well known Diophantine equations</td>
<td>S. Laishram</td>
<td>Stat-Math Unit, Delhi</td>
<td>Ministry of Defence, Govt. of India</td>
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<tr>
<td>2.</td>
<td>Design and Development of Database and Analytical Tools for Microarray Data on Leishmani Donovani Parasite</td>
<td>A. Sen Gupta</td>
<td>ASU, Kolkata</td>
<td>DBT, Ministry of Science and Technology, Govt. of India</td>
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### Centre for Soft Computing Research: A National Facility

<table>
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<tr>
<th>Sl. no.</th>
<th>Name of the project</th>
<th>Principal Investigator(s)</th>
<th>Unit(s) involved</th>
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<tbody>
<tr>
<td>1.</td>
<td>DAE Raja Ramanna Fellowship</td>
<td>S.K. Pal</td>
<td>CSCR</td>
<td>Department of Atomic Energy, Govt. of India</td>
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<tr>
<td>2.</td>
<td>DST INSPIRE Faculty Award</td>
<td>S. Das</td>
<td>CSCR</td>
<td>DST, Govt. of India</td>
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<tr>
<td>3.</td>
<td>Retrieval of Atmospheric water vapour from NAVIC/GAGAN data &amp; prediction of extreme weather events based on machine learning techniques</td>
<td>S. Das</td>
<td>CSCR</td>
<td>ISRO</td>
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<td>4.</td>
<td>Understanding vision from filling in and visual illusion perspectives with the help of computational modeling</td>
<td>K. Ghosh</td>
<td>CSCR</td>
<td>Cognitive Science Research Initiative, DST, Govt. of India</td>
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<tr>
<td>5.</td>
<td>Development of computer vision based 3D Indian sign languages recognition to assist differently abled</td>
<td>S. Roy</td>
<td>CSCR</td>
<td>Women Scientist Scheme-B, DST, Govt. of India</td>
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</tbody>
</table>

### Completed Projects

#### Theoretical Statistics and Mathematics Division

1. Exponential Diophantine Equations: Resolution of some well known Diophantine equations

#### Applied Statistics Division

1. Design and Development of Database and Analytical Tools for Microarray Data on Leishmani Donovani Parasite
## Computer and Communication Sciences Division

<table>
<thead>
<tr>
<th>No.</th>
<th>Project Title</th>
<th>Investigator(s)</th>
<th>Institute(s)</th>
<th>Funding/Partnership Details</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Lithography Aware Physical Design for Below 20 nm Process Technology</td>
<td>S. Sur-Kolay</td>
<td>ACMU</td>
<td>Indo-Taiwan Joint Research Programme in Science &amp; Technology</td>
</tr>
<tr>
<td>2.</td>
<td>An Equivalence Checking Framework for Vulnerability Assessment for FPGA-based design flows</td>
<td>A. Banerjee</td>
<td>ACMU</td>
<td>Centre for Artificial Intelligence and Robotics, DRDO, Govt. of India</td>
</tr>
<tr>
<td>3.</td>
<td>Delay Fault Modeling and Test Generation for Power Supply Noise</td>
<td>S. Sur-Kolay, B.B. Bhattacharya</td>
<td>ACMU</td>
<td>Intel Corporation, USA</td>
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## Social Sciences Division

<table>
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<tr>
<th>No.</th>
<th>Project Title</th>
<th>Investigator(s)</th>
<th>Institute(s)</th>
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<tbody>
<tr>
<td>1.</td>
<td>Traffic Survey on Fare Structure</td>
<td>D. Mukherjee</td>
<td>SOSU</td>
<td>Metro Railway, Kolkata</td>
</tr>
<tr>
<td>2.</td>
<td>Poverty and Aspiration</td>
<td>S. Mitra</td>
<td>SOSU</td>
<td>ESRC grant through CAGE, Warwick University, UK</td>
</tr>
<tr>
<td>3.</td>
<td>Manchester University-ISI Project on Political Economy</td>
<td>S. Mitra</td>
<td>SOSU</td>
<td>ESRC Grant, Manchester</td>
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<tr>
<td>4.</td>
<td>Climate Change and Agricultural Yield in Karnataka</td>
<td>M. Swaminathan</td>
<td>EAU</td>
<td>Karnataka Govt.</td>
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</table>

## Statistical Quality Control and Operations Research Division

<table>
<thead>
<tr>
<th>No.</th>
<th>Project Title</th>
<th>Investigator(s)</th>
<th>Institute(s)</th>
<th>Funding/Partnership Details</th>
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<tbody>
<tr>
<td>1.</td>
<td>Six Sigma training and Implementation</td>
<td>A.K. Chakraborty</td>
<td>SQC &amp; OR Unit, Kolkata, Bangalore, Hyderabad &amp; Mumbai</td>
<td>ITC, PSPD</td>
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<tr>
<td>2.</td>
<td>Development of Sampling Scheme</td>
<td>R. Sett</td>
<td>SQC &amp; OR Unit, Kolkata</td>
<td>ITC Ltd.</td>
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<tr>
<td>3.</td>
<td>QMS Implementation at ISC, ITC</td>
<td>R. Sett</td>
<td>SQC &amp; OR Unit, Kolkata</td>
<td>ITC Ltd.</td>
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<tr>
<td>4.</td>
<td>Certificate Program on Business Analytics</td>
<td>A. Gupta</td>
<td>SQC &amp; OR Unit, Kolkata</td>
<td>Participants</td>
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<tr>
<td>5.</td>
<td>Six Sigma Training &amp; Implementation</td>
<td>S. Ray, A. Roy Chowdhury &amp; E.V. Gijo</td>
<td>SQC &amp; OR Unit, Bangalore</td>
<td>HAL Management Academy, Bangalore</td>
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<td>No.</td>
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<td>Institution(s)</td>
<td>Sponsor(s)</td>
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<td>6.</td>
<td>Module-wise Training on Statistical Techniques</td>
<td>E.V. Gijo &amp; A. Roy Chowdhury &amp; S. Ray</td>
<td>SQC &amp; OR Unit, Bangalore</td>
<td>Biocon Ltd., Bangalore</td>
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<tr>
<td>7.</td>
<td>Six Sigma Training &amp; Implementation</td>
<td>A.K. Chakraborty &amp; A. Roy Chowdhury</td>
<td>SQC &amp; OR Unit, Bangalore &amp; Kolkata</td>
<td>ITC, Bollaram; ITC Triveni &amp; ITC, Kovai</td>
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<tr>
<td>8.</td>
<td>Program on Design of Experiments</td>
<td>B. John</td>
<td>SQC &amp; OR Unit, Bangalore</td>
<td>TITAN Company Limited (Jewellery Division)</td>
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<tr>
<td>9.</td>
<td>Facilitation and guidance for statistical modelling</td>
<td>B. John</td>
<td>SQC &amp; OR Unit, Bangalore</td>
<td>Hewlett Packard</td>
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<tr>
<td>10.</td>
<td>Program on Business Analytics</td>
<td>B. John &amp; K.K. Chowdhury</td>
<td>SQC &amp; OR Unit, Bangalore</td>
<td>Airbus India</td>
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<tr>
<td>11.</td>
<td>Program on Business Analytics</td>
<td>A. Banerjee, B. John &amp; A. Sarkar</td>
<td>SQC &amp; OR Unit, Kolkata, Bangalore &amp; Mumbai</td>
<td>L&amp;T Infotech</td>
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<td>12.</td>
<td>Program on Business Analytics</td>
<td>A. Sarkar &amp; B. John</td>
<td>SQC &amp; OR Unit, Mumbai &amp; Bangalore</td>
<td>Adani Power</td>
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<td>13.</td>
<td>Training program on Statistical Techniques</td>
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<td>SQC &amp; OR Unit, Bangalore</td>
<td>Environmental Management &amp; Policy Research Institute (EMPRI)</td>
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<td>14.</td>
<td>Six Sigma Green Belt Certification Program</td>
<td>U.H. Acharya &amp; E.V. Gijo</td>
<td>SQC &amp; OR Unit, Bangalore</td>
<td>TESCO</td>
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<td>15.</td>
<td>Six Sigma Training &amp; Implementation</td>
<td>U.H. Acharya</td>
<td>SQC &amp; OR Unit, Bangalore</td>
<td>Sundaram Clayton, Hosur</td>
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<td>16.</td>
<td>Statistical Techniques for Quality Control</td>
<td>U.H. Acharya</td>
<td>SQC &amp; OR Unit, Bangalore</td>
<td>FIAT Ltd. Pune</td>
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<td>17.</td>
<td>General Training program on Six Sigma Green Black Belt including project guidance</td>
<td>A. Rajagopal</td>
<td>SQC &amp; OR Unit, Coimbatore</td>
<td>Participants</td>
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<tr>
<td>18.</td>
<td>Quality System Implementation</td>
<td>A. Rajagopal</td>
<td>SQC &amp; OR Unit, Coimbatore</td>
<td>SRC, Salem</td>
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<td>No.</td>
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<td>19.</td>
<td>Metric for day to day management information system</td>
<td>A. Rajagopal</td>
<td>SQC &amp; OR Unit, Coimbatore</td>
<td>SRC, Salem</td>
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<td>20.</td>
<td>New product Development and flow of orders from Kerala for school uniforms processing</td>
<td>A. Rajagopal</td>
<td>SQC &amp; OR Unit, Coimbatore</td>
<td>TCTP, Erode</td>
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<td>21.</td>
<td>Quality System Implementation</td>
<td>A. Rajagopal</td>
<td>SQC &amp; OR Unit, Coimbatore</td>
<td>MYK, Hyderabad</td>
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<td>22.</td>
<td>Implementation of increasing turnover</td>
<td>A. Rajagopal</td>
<td>SQC &amp; OR Unit, Coimbatore</td>
<td>Shiva Texyarn Ltd.</td>
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<tr>
<td>23.</td>
<td>Quality System Implementation</td>
<td>A. Rajagopal</td>
<td>SQC &amp; OR Unit, Coimbatore</td>
<td>Shiva Texyarn Ltd.</td>
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<td>24.</td>
<td>Measurable objective performance Evaluation</td>
<td>A. Rajagopal</td>
<td>SQC &amp; OR Unit, Coimbatore</td>
<td>Shiva Texyarn Ltd.</td>
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<td>25.</td>
<td>DFSS for Engineering R&amp;D</td>
<td>A. Rajagopal</td>
<td>SQC &amp; OR Unit, Coimbatore</td>
<td>Brakes India</td>
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<td>26.</td>
<td>Project Management of External Assignments for Customers satisfaction</td>
<td>A. Rajagopal</td>
<td>SQC &amp; OR Unit, Coimbatore</td>
<td>FCRI</td>
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<td>29.</td>
<td>Quality &amp; Reliability Engineering</td>
<td>A. Sarkar</td>
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<td>DIAT, Pune</td>
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<td>30.</td>
<td>Workshop on Business Analytics and Data Mining</td>
<td>A. Sarkar</td>
<td>SQC &amp; OR Unit, Mumbai &amp; Bangalore</td>
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<td>31.</td>
<td>Training on SPC</td>
<td>S. Sikder</td>
<td>SQC &amp; OR Unit, Mumbai</td>
<td>Global Nonoven, Igatpuri, Maharashtra</td>
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<td>32.</td>
<td>Green Belt Training</td>
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<td>Grasim Industries, Bharuch</td>
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<td>Workshop on Business Analytics and Data Mining</td>
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<td>SQC &amp; OR Unit, Mumbai</td>
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### Projects

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<th>Name of the Project</th>
<th>Principal Investigator(s)</th>
<th>Unit(s) involved</th>
<th>Location/Participants</th>
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<tr>
<td>36.</td>
<td>Green Belt Training</td>
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<td>Hindalco Industries, Singrauli, Madhya Pradesh</td>
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<td>37.</td>
<td>Statistical Techniques for Business Forecast</td>
<td>A. Sarkar</td>
<td>SQC &amp; OR Unit, Mumbai</td>
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<td>38.</td>
<td>Statistical Techniques for Business Forecast</td>
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<td>39.</td>
<td>Workshop on Business Analytics and Data Mining</td>
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<td>SQC &amp; OR Unit, Mumbai &amp; Bangalore</td>
<td>Participants</td>
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<td>Green Belt Training</td>
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<td>SQC &amp; OR Unit, Mumbai</td>
<td>Participants</td>
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<td>41.</td>
<td>FMEA Training</td>
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<td>SQC &amp; OR Unit, Mumbai</td>
<td>Biological E Limited, Hyderabad</td>
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<td>42.</td>
<td>Weekend Six Sigma Green Belt Training</td>
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<td>43.</td>
<td>Six Sigma Black Belt Training</td>
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<td>Weekend Six Sigma Green Belt Training</td>
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<td>46.</td>
<td>Statistical Techniques for Research Methodology</td>
<td>A. Sarkar</td>
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<td>SQC &amp; OR Unit, Mumbai</td>
<td>Participants</td>
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<td>48.</td>
<td>Six Sigma Black Belt Training</td>
<td>A. Sarkar</td>
<td>SQC &amp; OR Unit, Mumbai</td>
<td>Participants</td>
</tr>
</tbody>
</table>

### North East Projects

#### Ongoing Projects

<table>
<thead>
<tr>
<th>Sl. no.</th>
<th>Name of the Project</th>
<th>Principal Investigator(s)</th>
<th>Unit(s) involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Paleogeography of the Neogene foreland basin of Eastern Himalaya and its relationship with contemporaneous sediments of Mizoram</td>
<td>T. Chakraborty</td>
<td>GSU</td>
</tr>
</tbody>
</table>

71
## Completed Projects

<table>
<thead>
<tr>
<th>Sl. no.</th>
<th>Name of the project</th>
<th>Principal Investigator(s)</th>
<th>Unit(s) involved</th>
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<tbody>
<tr>
<td></td>
<td><strong>Biological Sciences Division</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>North East Training Program</td>
<td>S. Ghosh</td>
<td>HGU</td>
</tr>
<tr>
<td></td>
<td><strong>Statistical Quality Control and Operations Research Division</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Data Analytics for Medical and Healthcare Professionals</td>
<td>G. Murali Rao &amp; A.L.N. Murthy</td>
<td>SQC &amp; OR Unit, Hyderabad</td>
</tr>
</tbody>
</table>
4. SYMPOSIA, CONFERENCES, WORKSHOPS, LECTURES AND SEMINARS ORGANISED

Symposia and Conferences


7. 7th International Conference on “Pattern Recognition and Machine Intelligence (PReMI’17)”: MIU, Kolkata, December, 05-08, 2017.


Conferences and Seminars


North-East Symposia and Conferences

1. 5th Workshop on “Pattern Analysis and Applications”: CVPR, Kolkata, held at Central Institute of Technology, Kokrajhar, Assam, February 05-08, 2018.

Workshops and Training Programmes


4. Training Programme on “Statistical Data Analytics”: ASU, Kolkata, in collaboration with GE India Technology Centre Private limited, April 22-23, 2017.


7. Training Programme on (Global Initiative For Academic Networks) “Decentralized Computations (From Nets to Swarms)”: ACMU, Kolkata, December 04-08, 2017.


11. Training Programme on "Image captioning with deep learning": ECSU, Kolkata, June 05, 2017.


15. Training Programme on “Interactive and Visual Approaches to Data Mining (GIAN-IVADM)”: MIU, Kolkata, October 03 – November 03, 2017.


17. Workshop on “Satellite Remote Sensing and Image Analysis Activities”: SSIU, Bangalore, in collaboration with the Bangalore Section IEEE GRSS Chapter, June 12, 2017.


22. Course on “Morphometrics and its Applications in Palaeontology”: GSU, Kolkata in collaboration with University of California (Riverside), Kolkata, March 28–29, 2018.


27. Training on "Career Interest Profile Similarity": PRU, Kolkata, August 08, 2017.


42. Training Programme on “Microeconomics” (for ISS Probationers): EPU, Delhi, May 22-June 02, 2017.

43. 6th Workshop on “Macroeconomics”: EPU, Delhi, October 26, 2017.

44. Workshop on “Professional Development”: EPU, Delhi, October 30–November 02, 2017.

45. 3rd Annual Workshop on “CECFEE”: EPU, Delhi, held at Udaipur, November 17-18, 2017.

46. Workshop on “Jobless Growth”: EPU, Delhi, in collaboration with World Bank, March 08, 2018.

47. Workshop on “Public Economic”: EPU, Delhi, in collaboration with Delhi School of Economics, March 20-21, 2018


49. Workshop on “Contemporary Rural Issues in India”: EAU, Bangalore, March 27, 2018.
52. Training Programme on “Six Sigma Green Belt”: SQC & OR, Kolkata, held at ISI, Giridih, October 30–November 03, 2017.
59. Training Programme on “Six Sigma Green Belt”: SQC & OR, New Delhi, August 02-04, 2017.
60. Training Programme on “Six Sigma Black Belt 1st Module”: SQC & OR, New Delhi, August 22- 24, 2017.
63. Training Programme on “Six Sigma Black Belt 3rd Module”: SQC & OR, New Delhi, October 10-13, 2017.
64. Training Programme on “Six Sigma Black Belt 4th Module”: SQC & OR, New Delhi, November 15-17, 2017.
65. Workshop on “Programme on Environmental Data Interpretation, Compilation and Reporting”: SQC & OR, New Delhi, in collaboration with Central Pollution Control Board, Ministry of Environment, Forest and Climate Change, Govt. of India, February 05-09, 2018.
70. Training Programme on “Six Sigma Master Black Belt (MBB-27)”: SQC & OR, Bangalore, June 05–17, 2017.
Conferences and Seminars

71. Training Programme on “Six Sigma Black Belt (BB-25)”: SQC & OR, Bangalore, July 10–15 (Phase-1) and August 28– September 02, 2017 (Phase-2).


73. Training Programme on “Six Sigma Green Belt (GB-42)”: SQC & OR, Bangalore, July 24-29, 2017.

74. Training Course on “Predictive Modeling using Python (PM-01)”: SQC & OR, Bangalore, August 17–19, 2017.

75. Training Programme on “Six Sigma Green Belt (GB-43)”: SQC & OR, Bangalore, September 12-17, 2017.


77. Training Programme on “Six Sigma Green Belt (GB-44)”: SQC & OR, Bangalore, November 06-11, 2017.


79. Training Programme on “Six Sigma Black Belt (BB-26)”: SQC & OR, Bangalore, October 09-15 (Phase-1) and November 27– December 02, 2017 (Phase-2).


82. Training Programme on “Multivariate Data Analysis”: SQC & OR, Bangalore, February 08-10, 2018.

83. Training Programme on “Six Sigma Black Belt (BB-27)”: SQC & OR, Bangalore, February 12–17 2018 (Phase-1) and March 12–17, 2018 (Phase-2).


89. Training Programme on “Students from local engineering colleges”: SQC & OR, Coimbatore, May 2017 - June 2017.


94. Training Programme on “Metric for Day to day management information system”: SQC & OR, Coimbatore, August 18, 2017.


100. Training Programme on “Business Analytics with Six Sigma Master Black Belt”: SQC & OR, Hyderabad, September 18-23, 2017 (Phase-I) and October 23-28, 2017(Phase-II).

101. Training Programme on “Six Sigma Black Belt”: SQC & OR, Hyderabad, December 11–16, 2017(Phase-I) and January 16 – 20, 2018(Phase-II).


Conferences and Seminars


110. Training Programme on “Statistical Techniques for Data Mining and Business Analytics”: SQC & OR, Mumbai, held at Tanfeeth Dubai, July 30 – August 03, 2017.


112. Training Programme on “Statistical Techniques for Data Mining and Business Analytics”: SQC & OR, Mumbai, held at Hotel Athithi, Mumbai, September 08-10 and 22-24, 2017.


North-East Workshops and Training Programmes


2. Workshop on “Mathematical Genomics at Department of Zoology”, ASU, Kolkata, held at Sikkim University, February 19-22, 2018.

4. Workshop on “Mathematical Genomics at Department of Bio Engineering and Technology”, ASU, Kolkata, held at Gauhati University, March 27-30, 2018.


10. Workshop on “Statistical and Computing Methods for Life-Science Data Analysis”: BAU, Kolkata in collaboration with Department of Botany, Mizoram University, Aizawl, Mizoram, March 05-10, 2018.

11. Training Programme on “Research Methodology Course in Social Science (for Ph.D. Students)”: ERU, Kolkata in collaboration with The Indian Council of Social Science Research (ICSSR), held at the North-East Centre, Indian Statistical Institute, Tezpur, January 15-25, 2018.


15. Training Program on "Advanced Data Analysis", SQC & OR, Bangalore, held at ICFAI University, Agartala, Tripura, November 28-30, 2017.


Lectures and Seminars

Theoretical Statistics and Mathematics Division

Stat-Math Unit, Kolkata

1. Asanuma, T., University of Toyama, Japan (08.03.2018): Semi-injective local homeomorphisms from the real metric space to itself.
Conferences and Seminars


3. Bera, Anil Kumar, University of Illinois at Urbana Champaign, USA (03.07.2017): Asymptotic Variance of Test Statistics in ML and QML Frameworks.


8. Basu, Saugata, Purdue University, USA (19.03.2018): Quantitative bounds on the topology of semi-algebraic and definable sets.

9. Basu, Saugata, Purdue University, USA (21.03.2018): On the number of lines on projective hypersurfaces.


16. Holkar, Rohit Dilip, IISER, Pune (05.06.2017): Locally free actions of groupoids and proper correspondences.


22. Mukherjee, Mayukh, Technion, Israel (30.08.2017): Asymptotic estimates on the geometry of Laplace eigenfunctions.


31. Roy, Arindam, Rice University, USA (17.07.2017): Unnormalized differences and fractional parts of zeros of the derivative of the Riemann $\xi$ function.


34. Sen, Sanchayan, McGill University, France (29.05.2017): Random structures: Phase transitions, scaling limits and universality.


38. Sitaram, Alladi, IISc, Bangalore (27.03.2018 & 28.03.2018): Lectures on Harmonic Analysis.

Stat-Math Unit, Delhi


3. Chaubey, Yogendra P., Concordia University, Montreal, Canada (07.02.2018): On nonparametric smooth estimators of probability density function for circular data.


5. Diener, Francine, Laboratoire Jean Dieudonné, University of Nice, France (11.10.2017): How to fit a jump diffusion model to return prices?


15. Hallin, Marc, ECARES and Departement de Mathematique, Universite libre de Bruxelles, Belgium (15.02.2018): On Multivariate Distribution and Quantile Functions, Ranks and Signs: a Measure Transportation Approach.


22. Ranjan, Pritam, IIM, Indore (03.05.2017): Computer Experiments – A Brief Overview.


29. Toth, Balint, Renyi Institute of Mathematics, Budapest, Hungary and School of Mathematics, University of Bristol, UK, (08.03.2018 & 09.03.2018): Invariance principle for the random Lorentz gas beyond the Boltzmann-Grad (Gallavotti-Spohn) limit.


**Stat-Math Unit, Bangalore**

1. Accardi, Luigi, Centro Interdipartimentale Vito Volterra, Italy (13.03.2018, 15.03.2018, 20.03.2018, 22.03.2018 & 27.03.2018): Quantum decomposition of classical random variables.


3. Bhattacharya, Prasit, University of Notre Dame, USA (06.07.2017): Recent progress towards the telescope conjecture.


6. Baryshnikov, Yuliy, University of Illinois, Urbana-Champaign, USA (08.02.2018): Disappearing coefficients and lacunae for hyperbolic polynomials.


Conferences and Seminars


10. Chakraborty, Anirvan, École polytechnique fédérale de Lausanne, Switzerland (17.08.2017): Functional Registration and Local Variation.

11. Calder, Nigel S., University of Waikato, New Zealand (05.09.2017): Using mobile technologies to enhance the learning of mathematics.

12. Chandgotia, Nishant, Tel Aviv University, Israel (12.10.2017): Irrational rotations; random affine transformations and the central limit theorem.


17. Gupta, Anil, IIM, Ahmedabad and Honey Bee Network (07.11.2017): Modelling and research gaps in inclusive innovation research.


23. Mukherjee, Mayukh, Technion, Israel (03.08.2017): Asymptotic estimates on the geometry of Laplace eigenfunctions.


25. Madan, Amman, Azim Premji University, Bangalore (06.3.2018): Identity politics in school curricula: post-modernism and the problem of academic knowledge.

26. Nayak, Narendra, FIRA, Mangalore (20.08.2017): The case for scientific temper article 51ah of the Constitution of India.

28. Parthasarathy, Aprameyan, Paderborn University, Germany (27.07.2017): Boundary values; resonances and scattering poles on rank one symmetric spaces.


34. Sen, Sanchayan, McGill University, Canada (01.06.2017): Random structures: Phase transitions; scaling limits; and universality.


42. Soulier, Philippe, University Paris Nanterre, France (15.02.2018): An invariance principle for sums and record times of regularly varying stationary sequences.


44. Saha, Arnab, Australian National University, Canberra (14.03.2018): Isocrystals associated to arithmetic jet spaces of abelian schemes.

45. Sane, Sarang, IIT, Madras (20.03.2018 & 22.03.2018): The Pfaffian of a matrix and unimodular rows & Specialization closed subsets; thick subcategories and Cohen-Macaulay rings.


Conferences and Seminars

48. Thattai, Mukund, National Centre for Biological Sciences, Bangalore (17.10.2017): Possible and Impossible Cells.


50. Toth, Balint, University of Bristol, UK and Alfred Renyi Institute of Mathematics, Budapest, Hungary (12.03.2018): Ashok Maitra Memorial.


52. Vadlamani, Sreekar, TIFR CAM, Bangalore (04.04.2017): Integral geometry: at the crossroads of geometry and measure theory.

53. Vyas, Rishi, Ben Gurion University, Israel (15.06.2017): A noncommutative Matlis-Greenlees-May equivalence.

Applied Statistics Division

**Applied Statistics Unit, Kolkata**


4. Chaubey, Yogendra P, Department of Mathematics and Statistics Concordia University, Montreal, Canada (10.01.2018): On nonparametric smooth estimators of probability density function for circular data.

5. Datta, Jyotishka, Department of Mathematical Sciences University of Arkansas at Fayetteville, USA (10.01.2017): Sparse signal recovery and default Bayesian analysis using global-local shrinkage priors.


8. Shukla, Ankur, Department of Applied Mathematics, Indian Institute of Technology (ISM), Dhanbad (20.06.2017): Reliability Analysis and Faults Prediction during the Development Phase of Software.

10. Narisetty, Naveen, Department of Statistics, University of Illinois at Urbana-Champaign, USA (14.08.2017): Consistent and Scalable Bayesian Model Selection for High Dimensional Data.

11. Nandy, Rajesh Ranjan, School of Public Health, UNT Health Science Center, USA (12.12.2017): Independent Component Analysis in the presence of unknown correlated Gaussian noise.


13. Panda, Mahesh Kumar, Department of Statistics, Central University of Orissa, Odisha (22.06.2017): Exact designs for polynomial regression in view of de la Garza phenomenon.


**Interdisciplinary Statistical Research Unit, Kolkata**

1. Datta, Gauri Shankar, University of Georgia, USA (28.06.2017): Robust Hierarchical Bayes Small Area Estimation for Nested Error Regression Model.

2. Dutta, Somak, Iowa State University, USA (03.08.2017): Bayesian spatial variable selection methods for detecting activation regions in fMRI studies.


5. Mukherjee, Soumendu Sundar, University of California, Berkeley (15.06.2017): Scalable and fast community detection using divide and conquer techniques.


8. Roy, Vivekananda, Iowa State University, USA (21.06.2017): Convergence analysis of block Gibbs samplers for Bayesian probit linear mixed models.


**Applied Statistics Unit, Chennai**


Conferences and Seminars


5. Ghosh, Sibasish, The Institute of Mathematical Sciences (IMSc), Tamil Nadu (02.03.2018): Witnessing arbitrary bipartite entanglement in a measurement-device-independent way.

6. Gupta, Ashmita, Wageningen University, Netherlands (09.03.2018): Female labor as insurance: Trade Liberalization and Female Labor Force Participation in India.


Applied and Official Statistics Unit, Tezpur


4. Mohan, Manju, IIT Delhi, Delhi (03.04.2017): Concept Note on Combating Air Pollution in Urban Airsheds of India.


Computer and Communication Sciences Division

Advanced Computing and Microelectronics Unit, Kolkata

7. Fujita, Masahiro, University of Tokyo, Japan (27.04.2017): Very efficient power gating for higher performance computing.
10. Maheswari, Anil, Carleton University, Ottawa, Canada (06.02.2018): Faster algorithms for some optimization problems on collinear points.
15. Sarkar Arnab, IIT, Guwahati, (08.06.2017): Optimal Scheduling of Real-time Tasks using Supervisory Control of Timed DES.
Conferences and Seminars


Electronics and Communication Sciences Unit, Kolkata


Machine Intelligence Unit, Kolkata

1. Ahuja, Narendra, Department of Electrical and Computer Engineering, Beckman Institute and Coordinated Science Laboratory, University of Illinois, Urbana-Champaign (23.03.2018): The Fun and Fulfillment Research can Bring to Life: Examples From Computer Vision (Video Conference)


5. Mandal, Gautam, Tata Institute of Fundamental Research, Mumbai (23.03.2018): The arrow of time.


**Systems Science and Informatics Unit, Bangalore**


**Computer Science Unit, Chennai**


2. Chakraborti, Anirban, Jawaharlal Nehru University, New Delhi (22.12.2017): Socio-economic inequalities: Can humans be modeled like atoms?

3. Gowda, M. Seetharama, University of Maryland, Baltimore County (23.11.2017): The Lyapunov rank of a proper cone.


5. Tangirala, Arun K., Department of Chemical Engineering, IIT, Madras (06.10.2017): Data-driven reconstruction of causal graphs for multivariate stationary processes.

**Physics and Earth Sciences Division**

**Geological Studies Unit, Kolkata**


2. Basilici, Giorgio, University of Campinas, Brazil (18.12.2017): How and where Titanosaurs laid their eggs in Argentina?

3. Basilici, Giorgio, University of Campinas, Brazil (19.12.2017): Were Precambrian deep-water deposits similar to Phanerozoic analogous?


5. Hofmann, Axel, University of Johannesburg, South Africa (08.03.2018): Surface Processes on Early Earth.
Conferences and Seminars

6. Hughes, Nigel, University of California, USA (Riverside) (26.03.2018): Ups and downs in the Himalaya using fossils to decipher its history and role of fossils in scientific outreach in rural Bengal.


Physics and Applied Mathematics Unit, Kolkata


2. Bose, Debanjan, Sung Kyun Kwan University, South Korea (20.04.2017): Highlights from icecube neutrino observatory.


Biological Sciences Division

Agricultural and Ecological Research Unit, Kolkata

2. Chakraborty, Subhendu, Centre for Ocean life, DTU Aqua, National Institute of Aquatic Resources, Technical University of Denmark (08.01.2018): A New Approach to Trait-based Plankton Modelling.


**Human Genetics Unit, Kolkata**


2. Majumder, Arunabha, Department of Biostatistics, UCLA, Los Angeles (09.01.2018): An efficient Bayesian meta-analysis approach for studying cross-phenotype genetic associations.

**Social Sciences Division**

**Economic Research Unit, Kolkata**


5. Bhattacharjee, Arnab Professor of Economics and Director, Spatial Economics & Econometrics Centre (SEEC), Heriot-Watt University, Edinburgh, United Kingdom (22.03.2018): How (Not) to do the Cholesky Decomposition: or, How Does the UK Economy Respond to International Shocks?

6. Chatterjee, Chirantan, Economics & Public Policy, Indian School of Business, Knowledge City, Sector 81, SAS Nagar, Mohali, Punjab (15.06.2017): IPR and Organization of Knowledge: New Evidence from India.


Conferences and Seminars


10. Dutta, Bhaskar, Department of Economics, University of Warwick, UK and Ashoka University, Haryana (01.11.2017): Coalition Formation and History Dependence.


12. Ferrero, Mario, Department of Economic, University of Eastern Piedmont, Italy (12.10.2017): Incentives Beyond the Grave.

13. Ferrero, Mario, Department of Economic, University of Eastern Piedmont, Italy (02.11.2017): The Economics of Religion: An Overview of Research.

14. Ferrero, Mario, Department of Economic, University of Eastern Piedmont, Italy (09.11.2017): Divine Competition in Greco-Roman Polytheism.


17. Mukherjee, Conan, Indian Institute of Technology, Bombay (01.06.2017): On Evaluating Authors’ Performance by Publications: An Axiomatic Study.


19. Ranjan, Abhishek, Department of Management Engineering, Technical University of Denmark (03.08.2017): Vickrey Meets Alonso: Commute Scheduling and Congestion in a Monocentric City.


*Linguistic Research Unit, Kolkata*


2. Ehsanul, Kabir, Mitcham Institute, Victoria, Australia (08.11.2017): The state and status of language technology works in Bangla language.


Conferences and Seminars

**Population Studies Unit, Kolkata**


4. Raut, Lakshmi Kant, Indian Institute of Management, Udaipur, Rajasthan, (02.05.2017): Early Childhood Development, Earnings Inequality and Social Mobility in an Educational Signaling Model.


**Sampling and Official Statistics Unit, Kolkata**


**Economics and Planning Unit, Delhi**


2. Bhalla, Manaswini, IIM, Bangalore (05.05.2017): The Business of Religion and Caste in India.


5. Bhargava, Alok, University of Maryland, USA (06.03.2018): Climate variability, rice production and groundwater depletion in India.

6. Chakraborty, Pavel, Jawaharlal Nehru University, New Delhi (27.10.2017): IPR and Organization of Knowledge.


9. Dubey, Pradeep, Stony Brook University, USA (23.05.2017): Insurance contracts with competitive pooling.
Conferences and Seminars

10. Dutta, Bhaskar, University of Warwick, UK and Ashoka University, Haryana (01.09.2017): Coalition Formation and History Dependence.


22. Kochhar, Nishtha, Georgetown University, USA (18.08.2017): Jati inequality in rural India.


25. Mani, Subha, Fordham University, USA (04.08.2017): Cognitive, Socioemotional, and Behavioral Returns to College Quality.

26. Moorthy, Sridhar, University of Toronto, Canada (08.11.2017): Advertising strategy in the presence of reviews: an empirical analysis.

27. Mookherjee, Dilip, Boston University, USA (07.03.2018): Communities, Networks and Development.


30. Pant, Manoj, Jawaharlal Nehru University, New Delhi (06.10.2017): Coincident Indicators and Forecasting in Economics using EEDM Analysis: A Study of the IIP.


32. S, Aney, Madhav, Singapore Management University, Singapore (28.04.2017): Corruption in the Supreme Court of India.


34. Serizawa, Shige, Osaka University, Japan (20.03.2018): Minimum price Walrasian equilibrium for general preferences: Serial Vickrey mechanisms.


**Economic Analysis Unit, Bangalore**


**Center for Soft Computing Research, Kolkata**

Conferences and Seminars

2. Brahmachary, R.L., Bose Institute, Kolkata (03.01.2018): Intelligence in Plants, Animals and Machines.

3. Das, Sumantra, Indian Institute of Chemical Biology, Kolkata (18.08.2017): Molecular basis to therapy.


5. Guha, Debatosh, Institute of Radio Physics and Electronics, University of Calcutta, Kolkata (15.09.2017): A Story of Challenges and Success in Research Career of an Engineer.

5. SANKHYĀ

The internationally renowned journal *Sankhya*, an official publication of the Indian Statistical Institute, was founded by Professor P.C. Mahalanobis in 1932 and began publication under his editorship. It is devoted to original research articles in Probability, Mathematical Statistics and Applied Statistics. Reviews and discussion articles on current research activity in the above areas are also published. A rigorous peer review process is followed for acceptance of articles submitted for publication in *Sankhya*. Many seminal articles in Probability, Theoretical Statistics and Applied Statistics have appeared in *Sankhya*. The journal is published in two separate series – Series A and Series B. Series A with two issues per year, one in February and the other in August, covers Probability and Theoretical Statistics, while Series B with two issues per year, one in May and the other in November, covers Applied and Interdisciplinary Statistics. The present Editorial Board (till December 2018) of *Sankhya* is as follows:

**Editor-in-Chief**: Dipak K. Dey, University of Connecticut, USA.

**Series A Editors**: Krishna Athreya, Iowa State University, Ames, USA  
: Gopal K. Basak, Indian Statistical Institute, Kolkata, India  
: Francisco Louzada, University of Sao Paulo, Sao Paulo, Brazil

**Series B Editor**: Sudipto Banerjee, University of California, Los Angeles, USA  
: Bertrand Clarke, University of Nebraska, Lincoln, USA  
: Bani Mallick, Texas A & M University, College Station, USA  
: Sumitra Purkayastha, Indian Statistical Institute, Kolkata, India

**Technical Editors**: Biswaranjan Behera, Indian Statistical Institute, Kolkata, India  
: Kiranmoy Das, Indian Statistical Institute, Kolkata, India

**Technical Support**: Urmichhanda Bhattacharya, Indian Statistical Institute, Kolkata, India

Beginning 2010, the Institute has been collaborating with Springer for printing and marketing the international edition of *Sankhya*, in *both prints and electronic editions*. The editorial system is now completely electronic, that is, the entire process starting from submission of articles to editorial processing ending in final editorial decision for articles is now done online. The free access to the articles of every editions of Sankhýã is available through the Sankhýã website (sankhya.isical.ac.in).

The figures below provide the sale volume of the international subscription (in Indian Rupees) for the year 2017.

<table>
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The following issues have been published during April 2017 to March 2018:

**November, 2017**: Volume 79, Part II, Series B [Both Electronic and Print Editions]  
**February, 2018**: Volume 80, Part I, Series A [Both Electronic and Print Editions]
6. SCIENTIFIC PAPERS AND PUBLICATIONS

(Some Publications may have multiple entries due to collaboration across Units)

Books Published

Theoretical Statistics and Mathematics Division

Stat-Math Unit, New Delhi


Applied Statistics Division

Applied and Official Statistics Unit, Tezpur


Computer and Communication Sciences Division

Computer Vision and Pattern Recognition Unit, Kolkata


Electronics and Communication Sciences Unit, Kolkata


Machine Intelligence Unit, Kolkata


Systems Science and Informatics Unit, Kolkata


Social Sciences Division

Economic Research Unit, Kolkata


Linguistic Research Unit, Kolkata


Publications

**Sociological Research Unit, Kolkata**


**Economics and Planning Unit, Delhi**


**Economic Analysis Unit, Bangalore**


**Library, Documentation and Information Sciences Division**

**Library, Kolkata**


**Centre for Soft Computing Research, Kolkata**


**Papers Published in Journals**

**Theoretical Statistics and Mathematics Division**

**Stat-Math Unit, Kolkata**


Stat-Math Unit, Delhi


Publications


Stat-Math Unit, Bangalore


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**Interdisciplinary Statistical Research Unit, Kolkata**


Publications


*Applied and Official Statistics Unit, Tezpur*


*Computer and Communication Sciences Division*

**Advanced Computing and Microelectronics Unit, Kolkata**


Publications


Computer Vision and Pattern Recognition Unit, Kolkata


Electronics and Communication Sciences Unit, Kolkata


Publications


Machine Intelligence Unit, Kolkata


Publications


Documentation, Research and Training Centre, Bangalore


**Systems Science and Informatics Unit, Bangalore**


Publications


**Computer Science Unit, Chennai**


**Cryptology and Security Research Unit, Kolkata**


Publications


Physics and Earth Sciences Division

Geological Studies Unit, Kolkata


**Physics and Applied Mathematics Unit, Kolkata**


Publications


Biological Sciences Division

**Agricultural and Ecological Research Unit, Kolkata**


Publications


**Biological Anthropology Unit, Kolkata**


**Human Genetics Unit, Kolkata**


3. Das, A, Chandra, A, Chakraborty, J, Chattopadhayay, A, Senapati S, Chatterjee, G. and Chatterjee, R.: Associations of ERAP1 coding variants and domain specific interaction with HLA-
C*06 in the early onset psoriasis patients of India, *Human Immunology*, 78(11-12), 724-730, 2017.


**Social Sciences Division**

**Economic Research Unit, Kolkata**


Publications


Linguistic Research Unit, Kolkata


**Population Studies Unit, Kolkata**


**Psychology Research Unit, Kolkata**


**Sampling and Official Statistics Unit, Kolkata**


---

**Sociological Research Unit, Kolkata**


7. Jana, Rabindranath, Maruthakutti, Rangasamy and Choudhuri, Anil K.: Survival Strategy of
Publications


### Economics and Planning Unit, Delhi


Publications


**Economic Analysis Unit, Bangalore**


**Statistical Quality Control and Operations Research Division**  
**SQC & OR Unit, Kolkata**


<table>
<thead>
<tr>
<th>No.</th>
<th>Author(s)</th>
<th>Title and Details</th>
</tr>
</thead>
</table>


**SQC & OR Unit, Bangalore**


**SQC & OR Unit, Chennai**


**SQC & OR Unit, Hyderabad**


**SQC & OR Unit, Pune**

Publications

Library, Documentation and Information Sciences Division

Library, Kolkata


Center for Soft Computing Research, Kolkata


Administrative Division

Central Stores Unit, Kolkata

Papers Published in Conference Proceedings

Applied Statistics Division

Applied Statistics Unit, Kolkata


Applied Statistics Unit, Chennai


Applied and Official Statistics Unit, Tezpur


Computer and Communications Sciences Division

Advanced Computing and Microelectronics Unit, Kolkata


Publications


 **Computer Vision and Pattern Recognition Unit, Kolkata**


Publications


Electronics and Communication Sciences Unit, Kolkata


Machine Intelligence Unit, Kolkata


Publications

Documentation, Research and Training Centre, Bangalore


Systems Science and Informatics Unit, Bangalore


Publications

Computer Science Unit, Chennai


Cryptology and Security Research Unit, Kolkata


Physics and Earth Sciences Division

Geological Studies Unit, Kolkata


Social Sciences Division

Economic Research Unit, Kolkata


Linguistic Research Unit, Kolkata


3. Dash, NiladriSekhar and Chakraborty, Arpita: Extraction and Processing of Web-Based News Text Data to Create a Structured Corpus of Indian English, 23rd Himalayan Languages Symposium (HLS-23), Department of English and Foreign Languages, School of Humanities & Social Sciences, Tezpur, 11-12, 2017.


Economics and Planning Unit, Delhi


Statistical Quality Control and Operations Research Division

SQC & OR Unit, Bangalore


Library, Documentation and Information Sciences Division

Library, Kolkata


Center for Soft Computing Research: A National Facility, Kolkata


Papers Published in Books

**Stat-Math Unit, Delhi**


**Applied Statistics Division**

*Interdisciplinary Statistical Research Unit, Kolkata*


*Applied and Official Statistics Unit, Tezpur*


**Computer and Communications Sciences Division**

*Machine Intelligence Unit, Kolkata*


**Systems Science and Informatics Unit, Bangalore**

**Biological Sciences Division**


**Biological Anthropology Unit, Kolkata**


**Social Sciences Division**

**Economic Research Unit, Kolkata**


**Linguistic Research Unit, Kolkata**


Publications


**Psychology Research Unit, Kolkata**


**Sociological Research Unit, Kolkata**


**Economics and Planning Unit, Delhi**


**Economic Analysis Unit, Bangalore**


**Statistical Quality Control and Operations Research Division
SQC & OR Unit, Kolkata**


**Patents
Computer and Communications Sciences Division
Advanced Computing and Microelectronics Unit, Kolkata**

7. VISITING SCIENTISTS, HONOURS AND AWARDS

VISITING SCIENTISTS

A number of distinguished scientists from India and abroad participated in the research, training and other scientific activities of the Institute during the year. Some of them came to the Institute on invitation and spent fairly long periods in the Institute to assist in the regular research and teaching programmes, while others came for short periods and gave lectures and seminars. Most of them were available for consultation by the faculty members of the Institute. Names of the visiting scientists are given below.

Theoretical Statistics and Mathematics Division

Stat-Math Unit, Kolkata

3. Bagchi, Sayan, INSPIRE Faculty, Since October 03, 2017 for five years.
5. Basu, Deepan, INSPIRE Faculty, Since September 20, 2017 for five years.
6. Bhattacharya, Soumya, INSPIRE Faculty, Since October 04, 2017 for five years.
18. Mukherjee, Mayukh, Technion-Israel Institute of Technology, Department of Mathematics, January 30-February 28, 2018.


**Stat-Math Unit, Delhi**

1. Adhya, Sumanta, West Bengal State University, July 31-August 12, 2017.


8. Chaubey, Yogendra P., Concordia University, Canada, February 01-March 31, 2018.


Visiting Scientists, Honours and Awards

27. Nandy, Rajesh, University of North Texas Health Science Center, Dallas, December 07-08, 2017.
34. Saikia, Neelam, IIT, Guwahati, April 15-26, 2018.
37. Sharma, Rakesh Kumar, Shri Mata Vaishno Devi University, Katra, July 04-08, 2017.
42. Yaikhom, Gagarine, University of Edinburgh, UK, April 07-09, 2017.

Stat-Math Unit, Bangalore

1. Accardi, Luigi, Centro Interdipartimentale Vito Volterra, Italy, March 05-till April 05, 2018.
4. Baryshnikov, Yuliy, University of Illinois at Urbana-Champaign, USA, February 06-10, 2018.
5. Chattopadhyay, Pratyusha, INSPIRE Faculty, Since November 01, 2013-till date.
6. Choudhuri, Manoj, NBHM Post-doctoral Fellow, April 03, 2017-till date.
8. De, Sandipan, NBHM Post-doctoral Fellow, February 01, 2017-till date.
9. Dolai, Dhruti Ranjan, INSPIRE Faculty, Since February 20-August 31, 2017 and September 01, 2017-till date.
15. Kasilingam, Ramesh, INSPIRE Faculty, Since September 24, 2015-till date.
20. Nair, Saranya, NBHM Post-Doctoral Fellow, Since March 31, 2017-till date.
23. Rajendran, Dhanya, INSPIRE Faculty, Since April 20, 2016-till date.
Visiting Scientists, Honours and Awards

24. Ramachandran, Koushik, Oklahoma State University, Japan, June 01-09, 2017.
29. Sarkar, Santanu, INSPIRE Faculty, October 31, 2016-till date.
32. Sivaguru, R., TIFR, Mumbai, April 04-09, 2017.
36. Tappe, Stefan, University of Hannover, Germany, August 28-September 01, 2017.
39. Vaish, Vaibhav, INSPIRE Faculty, Since January 04, 2016-till date.
40. Vsemirnov, Maxim A., St. Petersburg Department of Steklov, Russia, March 01, 2018 for 2 months.

Applied Statistics Division

**Applied Statistics Unit, Kolkata**


**Interdisciplinary Statistical Research Unit, Kolkata**


Applied Statistics Unit, Chennai


Applied and Official Statistics Unit, Tezpur


Computer and Communication Sciences Division

Advanced Computing and Microelectronics Unit, Kolkata

6. Pach, Janos, EPFL Lausanne and Renyi Institute, Budapest, during January 14 - 22, 2018
9. Santoro, Nicolo, School of Computer Science, Carleton University, Canada, December 03-09, 2017.
Visiting Scientists, Honours and Awards

**Computer Vision and Pattern Recognition Unit, Kolkata**


**Electronics and Communication Sciences Unit, Kolkata**

2. Chatterjee, Aratrik, IISc, Bangalore, August 14, 2017-February 14, 2018.

**Machine Intelligence Unit, Kolkata**

2. Mallik, Saurav, Department of Biostatistics, University of Miami, Florida, USA, December 01-22, 2017.

**Documentation, Research and Training Centre, Bangalore**


**Systems Science and Informatics Unit, Bangalore**

5. P.N. Suganthan, School of Electronics and Electrical Engineering, Nanyang Technological University, Singapore, December 26-30, 2017.


**Computer Science Unit, Chennai**


**Physics and Earth Sciences Division**

**Geological Studies Unit, Kolkata**

1. Basilici, Giorgio, DGRN, Institut de Geociencias, University of Campinas, São Paulo, Brazil, November 20-December 24, 2017.


4. Hughes, Nigel, University of California (Riverside), USA, March 26-31, 2018.


**Physics and Applied Mathematics Unit, Kolkata**

1. Das, T., Center for Nanoscale Science and Technology, National Institute of Standards and Technology, Maryland, USA, October 09-March 31, 2018.

2. De, Debajyoti, The Neotia University, West Bengal, November 01, 2017- March 31, 2018.

3. Paulsamy, Muruganandam, Department of Physics, Bharathidasan University, Tiruchirappalli, October 03-07, 2017.


**Biological Sciences Division**

**Agricultural & Ecological Research Unit, Kolkata**

Visiting Scientists, Honours and Awards

**Human Genetics Unit, Kolkata**


**Social Sciences Division**

**Economic Research Unit, Kolkata**


5. De, Parikshit, Department of Economic Sciences, Indian Institute of Science Education and Research, Bhopal, Madhya Pradesh, August 01- September 14, 2017.

6. De, Utpal K., Department of Economics, North-Eastern Hill University, Shillong, Meghalya, December 12, 2017-February 06, 2018.

7. Ferrero, Mario, Department of Economics, University of Eastern Piedmont, Via del Duomo, Italy, September 20-November 30, 2017


12. Sinha, Uday Bhanu, Department of Economics, Delhi School of Economics, University of Delhi, June 19-30, 2017.

**Linguistic Research Unit, Kolkata**

2. Bhattacharya, Mahidas School of Languages and Linguistics, Jadavpur University, Kolkata, June 27, 2017.
13. Rasid, Mamun, Dept. of Information Technology, Govt. of Bangladesh, November 17, 2017.
15. Reza, Md. Selim, Shahjalal University of Science and Technology (SUST), Bangladesh, December 20, 2017.
17. Saha, Diganta, Dept. of Computer Science and Engineering, Jadavpur University, Kolkata, October 10, 2017.

**Psychology Research Unit, Kolkata**

Visiting Scientists, Honours and Awards

19. Tarafder, Sreemoyee, West Bengal State University, Barasat, West Bengal, December 04, 2017.

Sampling and Official Statistics Unit, Kolkata

1. Lahiri, Parthasarathi, Joint Program in Survey Methodology (JPSM) & Department of Mathematics, University of Maryland, USA, September 05, 2017.

Economics and Planning Unit, Delhi

1. Altug, Samru, KOC University, Turkey, October 26, 2018.
9. Chakraborty, Pavel, Jawaharlal Nehru University, New Delhi, October 27, 2017.

11. Chatterjee, Swarnendu, Maastricht University, Netherlands, October 03, 2017-till October 02, 2018.


15. Das, Mausumi, Delhi School of Economics, New Delhi, November 03, 2017.


17. Deb, Rahul, University of Toronto, Canada, August 29, 2017.


20. Gopalakrishnan, Pawan, RBI, Mumbai, Govt. of India, May 01-05, 2017.


28. Kochhar, Nishtha, Georgetown University, USA, August 18, 2017.


32. Mani, Subha, Fordham University, USA, July 25-August 06, 2017.

Visiting Scientists, Honours and Awards

34. Mitra Thakur, Gogol, Ambedkar University, Delhi, October 18, 2017.
35. Mookherjee, Dilip, Boston University, USA, March 07-09, 2018.
36. Moorthy, Sridhar, University of Toronto, Canada, November 08, 2017.
39. Pant, Manoj, Jawaharlal Nehru University, New Delhi, October 06, 2017.
41. Raghavan, Madhav, HEC, University of Lausanne, Switzerland, January 12, 2018.
42. Sane, Renuka, National Institute of Public Finance and Policy, New Delhi, July 24-November 30, 2017.
43. Sarkar, Sumit, University of Texas at Dallas, USA, October 13, 2017.
44. Serizawa, Shige, Osaka University, Japan, March 20, 2018.
49. Wadhwa, Wilima, ASER Centre, New Delhi, July 24-November 30, 2017.

Economic Analysis Unit, Bangalore


Statistical Quality Control and Operations Research Division

SQC & OR Unit, Delhi

1. Raghavan, T.E.S., University of Illinois, Chicago, USA, March 01-10, 2018.
Visiting Scientists, Honours and Awards

**SQC & OR Unit, Chennai**


**SQC & OR Unit, Coimbatore**

Visiting Scientists, Honours and Awards

HONOURS AND AWARDS

Theoretical Statistics and Mathematics Division

Stat-Math Unit, Kolkata


Stat-Math Unit, Bangalore


Applied Statistics Division

Interdisciplinary Statistical Research Unit, Kolkata


Ghosh, A: Awarded: (1) Prof. A.M. Mathai Award for the best Research paper, Indian Mathematical Society, 2017; (2) Bose-Nandi Young Statistician Award (1st Place), Calcutta Statistical Association (CSA), 2017; (3) ISCB Conference Awards for Scientists (CASc) for biostatisticians from the countries underdeveloped in clinical biostatistics, International Society for Clinical Biostatistics, 2017.

Computer and Communication Sciences Division

Advanced Computing and Microelectronics Unit, Kolkata


Computer Vision and Pattern Recognition Unit, Kolkata

Visiting Scientists, Honours and Awards

Mitra, M.:
Awarded: Association for Computing Machinery's Special Interest Group on Information Retrieval Test of Time Award, 2017.

Pal, U.:
Selected: Fellow of the West Bengal Academy of Science and Technology, 2017.

Electronics and Communication Sciences Unit, Kolkata

Mukherjee, D.P.:
Selected: Fellow of West Bengal Academy of Science and Technology, 2017.

Machine Intelligence Unit, Kolkata

Bandyopadhyay, S.
Awarded: (1) Distinguished Alumnus Award, IIT, Kharagpur, 2017;
(2) National Leadership Award in Science and Technology (Young), Lakshmipat Singhania-IIM Lucknow, 2017;
(3) Infosys Prize for Engineering and Computer Science, 2017;
(4) J.C. Bose Fellowship, Engineering Sciences, DST, Govt. of India, 2017-2022;

De, R.K.:
Awarded: Fulbright-Nehru Academic and Professional Excellence Fellowship (Flex Award), 2016-2018.

Mitra, S.:
Awarded: Fulbright-Nehru Academic and Professional Excellence Fellowship (Flex Award), 2018-2019.
Selected: INAE Chair Professor, 2018-2019.

Physics and Earth Sciences Division

Physics and Applied Mathematics Unit, Kolkata

Pal, S.:
Awarded: Research Alumni Strategy Grant, University of Bonn, Germany, 2018.

Social Sciences Division

Psychology Research Unit, Kolkata

Dutta Roy, D.:

Sociological Research Unit, Giridih

Behera, Hari Charan
Selected: (1) Fellow, Royal Asiatic Society of Ireland & Great Britain, 2017;
Visiting Scientists, Honours and Awards


Economics and Planning Unit, Delhi

Mishra, D.:  

Mukhopadhyay, A.:  
Awarded: Honorary Associate Researcher, Centre for Science and Humanities, CNRS (France).

Sen, A.:  

Economic Analysis Unit, Bangalore

Ramachandran, V.K.:  
Appointed: Vice Chairman, Kerala State Planning Board, Trivandrum.

Swaminathan M.:  
Appointed: Non-Official Director, Board of Nationalised Bank, Union Bank of India.

Center for Soft Computing Research, Kolkata

Bandyopadhyay, S.:  
Awarded: Student Paper Award, National Workshop on Remote Sensing and Application (RSA), IEEE GRSS Kolkata Chapter.

Pal, S.K.:  
8. EDITORIAL AND OTHER SCIENTIFIC ASSIGNMENTS

EDITORIAL ASSIGNMENTS

Theoretical Statistics and Mathematics Division

Stat-Math Unit, Kolkata


Stat-Math Unit, Delhi


Dewan, I. (Associate Editor): *Journal Indian Statistical Association*.

Stat-Math Unit, Bangalore

Bhat, B.V. Rajarama (Chief Editor): *Proceedings of the Indian Academy of Sciences, Mathematics*.

Applied Statistics Division

Applied Statistics Unit, Kolkata


Interdisciplinary Statistical Research Unit, Kolkata


Bose, S. (Associate Editor): *Sankhya A*.


Computer and Communication Sciences Division

Advanced Computing and Microelectronics Unit, Kolkata

Editorial and other Assignments


Computer Vision and Pattern Recognition Unit, Kolkata


Electronics and Communication Sciences Unit, Kolkata


Machine Intelligence Unit, Kolkata


De, R.K. (Associate Editor): Sadhana.

Ghosh, A. (Associate Editor): IET Computer Vision.

Mitra, S. (Editor): IEEE/ACM Trans. on Computational Biology and Bioinformatics (IEEE), Wiley; Interdisciplinary Reviews: Data Mining and Knowledge Discovery; Information Sciences; Neurocomputing; INAE Letters; Fundamenta Informaticae.

Systems Science and Informatics Unit, Bangalore


Physics and Earth Sciences Division

Geological Studies Unit, Kolkata


*Physics and Applied Mathematics Unit, Kolkata*

Pal, S. (Member of the Consortium): *CMB Bharat* (a proposed Indian space mission for Cosmic Microwave Background observations).

*Social Sciences Division*

**Economics Research Unit, Kolkata**


**Linguistic Research Unit, Kolkata**


**Sociological Research Unit, Kolkata**


**Economics and Planning Unit, Delhi**


Roy Chowdhury, P. (Editor): *Indian Growth and Development Review*.

Editorial and other Assignments

**Economics and Analysis Unit, Bangalore**


**Centre for Soft Computing Research, Kolkata**

Ghosh, A. (Associate Editor): *IET-Computer Vision*.


**SCIENTIFIC ASSIGNMENTS/ACADEMIC VISITS ABROAD**

**Theoretical Statistics and Mathematics Division**

*Stat-Math Unit, Kolkata*

Datta, M.:
(1) International Centre for Theoretical Physics, Trieste, Italy, February 18-20, 2018; (2) University of Cagliari, Cagliari, Italy, February 16-17, 2018.

*Stat-Math Unit, Delhi*

Bandyopadhyay, A.:
(1) 10th ISI-ISM-ISSAS Three Institute Joint Meeting, ISM, Tokyo, Japan, November 30-December 02, 2017.

Bapat, R.B.:

Chatterjee, A.:
(1) 10th ISI-ISM-ISSAS Three Institute Joint Meeting, Institute of Statistical Mathematics (ISM), Tokyo, Japan, November 29-December 01, 2017; (2) University of Minnesota, USA, December 28-29, 2017.
Dewan, I.:  

Jain, T.:  
(1) Department of Mathematics, Iowa State University, July 24-28, 2017.

Stat-Math Unit, Bangalore

Bhat, B.V.R.:  
(1) Tokyo University of Science, October 1-7, 2017.

Rajeev, B.:  
(1) University of Freiburg, Germany, March 2-9, 2018.

Sarkar, J.:  
(1) Hebei Normal University, China, May 13-21, 2017; (2) Tsinghua Sanya International Mathematics Forum (TSIMF), Sanya, China, May 22-27, 2017; (3) Technion, Israel, June 16-26, 2017.

Yogeshwaran, D.:  
(1) Purdue University, USA, July 26-29, 2017; (2) Banff International Research Station, Banff, Canada, July 30-August 04, 2017.

Applied Statistics Division

Applied Statistics Unit, Kolkata

Dewanji, A.:  

Sengupta, D.:  
(1) 61st World Statistics Congress (WSC), Marrakech, Morocco, July 16-21, 2017.

Interdisciplinary Statistical Research Unit, Kolkata

Basu, A.:  
(1) Complutense University, Madrid, Spain, May 04-11, 2017.

Ghosh, A.:  
(1) Complutense University of Madrid, Spain, July 02-08, 2017; (2) International Society of Clinical Biostatistics (ISCB) Conference 2017, Vigo, Spain, July 08-14, 2017; (3) University of Oslo, Norway, January 03-13, 2018.

SahaRay, R.:  
(1) Indiana University & Purdue University, Indiana, Department of Mathematical Sciences, USA, November 01-30, 2017; (2) Institute of Applied Statistics, Sri Lanka, December 28-29, 2017.

Applied Statistics Unit, Chennai

Sudheesh, K.K.:  
(1) 10th MMR Conference, Université Grenoble Alpes, Grenoble, France, July 3-6, 2017.
Editorial and other Assignments

**Applied and Official Statistics Unit, Tezpur**

Jyethi, D.S.:  

**Computer and Communication Sciences Division**

**Advanced Computing and Microelectronics Unit, Kolkata**

Das, N.:  

Nandy, S.:  
(1) NII Shonan Workshop on Geometric Graphs, Algorithms and Applications, Shonan Village, Tokyo, Japan, October 30 – November 02, 2017.

Sur-Kolay, S.:  
(1) 35th IEEE International Conference (ICCD 2017), Boston Massachusetts (MA), USA, November 05-17, 2018.

Ghosh, S.C.:  

Banerjee, A.:  

**Computer Vision and Pattern Recognition Unit, Kolkata**

Pal, U.:  
(1) CDAR-WML: Workshop on Machine Learning, Kyoto, Japan, November 11, 2017; (2) Fellow of International Association for Pattern Recognition (IAPR), 2018; (3) 14th International Conference on Document Analysis and Recognition (ICDAR), Kyoto, Japan, November 13-15, 2017; (4) 4th Asian Conference on for Pattern Recognition (ACPR), Nanjing, China, November 26-29, 2017.

**Electronics and Communication Sciences Unit, Kolkata**

Das, S.:  
(1) 23rd International Conference on Soft Computing, Brno, Czech Republic, June 20-22, 2017; (2) 13th International Conference on Natural Computation, Fuzzy Systems and Knowledge Discovery (ICNC-FSKD 2017), Guilin, China, July 29-31, 2017; (3) School of Mechanical Science and Engineering, Huazhong University of Science & Technology, Wuhan, China, November 18-20, 2017; (2) School of Electrical Engineering, Zhengzhou University, China, November 21–26, 2017.

Mukherjee, D.P.:  
(1) IEEE International Symposium on Biomedical Imaging (ISBI) 2017, Melbourne, Australia, April 18-21, 2017; (2) Reinforced Random Forest at the University of Technology Sydney, April 24, 2017.

Pal, N.R.:  
(1) Politecnico diMilano, Italy, April 10, 2017, (2) CIS Workshop on Computational Intelligence, La Serena, Chile, April 21, 2017; (3) Computational Intelligence and Machine Learning: Trends,

Machine Intelligence Unit, Kolkata

Bandyopadhyay, S.:  
(1) University of Ljubjiana, April 14, 2017; (2) University of Magdeburg, May 10, 2017; (3) Congress on Evolutionary Computation (CEC), San Sebastian, Spain, June 06, 2017.

De, R.K.:  
(1) Department of Medicine, University of California, San Diego, USA, since February 06-May 05, 2017 and February 01-April 30, 2018.

Ghosh, A.:  
(1) University of Porto, Porto, April 22-May 06, 2017; (2) Yonsei University, South Korea, July, 09-14, 2017; (3) Hongkong Polytechnique University, Hongkong, July, 15-16, 2017; (4) Tribhuvan University, Nepal, December 10-11, 2017; (5) University of Peradeniya, Srilanka, December, 12-13, 2017.

Ghosh, K.:  
(1) 2nd Mediterranean Conference on Pattern Recognition and Artificial Intelligence (MedPRAI 2018), Rabat-Kenitra, Morocco, March 27-28, 2018; (2) The 10th International Conference on Advanced Computational Intelligence (ICACI 2018), Xiamen, China, March 29-31, 2018.

Maji, P.:  
(1) International Joint Conference on Rough Sets (IJCRS2017), Olsztyn, Poland, July 2017; (2) 9th Asian Conference on Intelligent Information and Database Systems (ACIIDS2017), Kanazawa, Japan, April 03-05, 2017.

Documentation Research and Training Centre, Bangalore

Dutta, B.:  
(1) Tallinn University, Tallinn, Estonia, November 02 –December 01, 2017.

Madalli, D.P.:  

Prasad A.R.D.:  
(1) Workshop on Open Harvest, Crete, Greece, May 29-June 04, 2017; (2) UNESCO Workshop on Open Institutional Repositories for Libya, Hammamet, Tunisia, August 18-25, and November 14 –20,
Editorial and other Assignments


Systems Science and Informatics Unit, Bangalore

Sagar, B.S.D.: (1) University of Trento, Italy, May 02-07, 2017; (2) China University of Geosciences, Beijing, China, November 12-17, 2017; (3) Reviewer, PhD Thesis, Multimedia University, Malaysia, 2017; (4) International Workshop on Frontiers in Mathematical Geosciences, Beijing, China, November 13-16, 2017.


Computer Science Unit, Chennai


Cryptology and Security Research Unit, Kolkata

Ruj, S.: (1) NTU, Singapore, April 17-May 16, 2017; (2) University of Ottawa, Canada, September 24-October 05, 2017.

Physics and Earth Sciences Division

Geological Studies Unit, Kolkata

Chakraborty, T.: (1) Dept. of Archaeology, Jahangirnagar University, Savar, Dhaka, Bangladesh, April 20-May 04, 2017; (2) DGRN, IG, University of Campinas, São Paulo, Brazil, September 03-October 04, 2017; (3) Qingdao National Laboratory for Marine Science and Technology, Qingdao, China, October 28-November 04, 2017.

Physics and Applied Mathematics Unit, Kolkata

Chatterjee, A.:  
(1) Workshop on Collider Physics and the Cosmos, Galileo Galilei Institute for Theoretical Physics, Florence, Italy, August 28-September 08, 2017.

Maiti, S.K.:  
(1) Department of Chemistry, Tel Aviv University, Israel, August 01-16, 2017; (2) Department of Nanotechnology for Sustainable Energy, School of Science and Technology, Kwansei Gakuin University, Japan, September 05-19, 2017.

Pal, S.: 
(1) University of KwaZulu-Natal, Durban, South Africa, November 9-25, 2017.

Roy, B.: 
(1) Department of Mathematics, National University of Singapore, Singapore, April 12-18, 2017.

Roy, P.:  
(1) Ton Duc Thang University, Ho Chi Minh City, Vietnam, July 09-22, 2017; (2) Istituto Nazionale Di Fisica Nucleare Sezione Di Perugia, Italy, November 19-December 16, 2017.

Biological Sciences Division

Human Genetics Unit, Kolkata

Ghosh, S.:  

Mukhopadhyay, I.:  

Social Sciences Division

Economic Research Unit, Kolkata

Das, S.: 
(1) Johann Wolfgang Goethe-Universität Frankfurt am Main, Faculty of Educational Science, Germany, May 25-26, 2017; (2) PEGNet Conference 2017, ETH Zürich, Switzerland, September 11-12, 2017.

Majumder, A.:  
(1) 61st ISI World Statistics Congress (WSC) (the biennial flagship conference of the International Statistical Institute (ISI) and its seven associations), Marrakech, Morocco, July 16-21, 2017.

Mitra, M.:  
(1) Cardiff Business School, Cardiff University, Cardiff, Wales, UK, July 05-10, 2017; (2) Seoul National University, Seoul, South Korea, February 23-March 03, 2018.
Editorial and other Assignments


Linguistic Research Unit, Kolkata


Psychology Research Unit, Kolkata

Chatterjee, G.: (1) University of Liberal Arts, Dhaka, Bangladesh, February14-16, 2018.

Sampling and Official Statistics Unit, Kolkata

Kar, A.: (1) UN-ESCAP, Bangkok, Thailand, April 10-13, 2017.

Sociological Research Unit, Giridih


Economics and Planning Unit, Delhi


Bishnu M.: (1) Australian National University, Canberra, Australia, April 24-May 05, 2017.

Ghate, C.: (1) Deakin University, Melbourne, Australia, November 14-28, 2017; (2) Royal Institute of International Affairs (Chatham House), Waddesdon Manor, UK, February 02-03, 2018.
Mukhopadhyay, A.:
(1) Department of Economics, University of Connecticut, USA, October 05-17, 2017; (2) Amsterdam

Mishra, D.:
(1) Brown University and Department of Economics, USA, April 07-14, 2017; (2) Instituto Tecnológico
Autónomo de México (ITAM), Mexico, April 15-21, 2017.

Ramaswami, B.:
(1) 11th Annual Meeting, Environment for Development Initiative (EfD), Addis Ababa, Ethiopia, October

Ray, T.:
(1) 18th World Congress of the International Economic Association (IEA) and Centro de Investigacion y
Docencia Economicas (CIDE), Mexico, June 19-23, 2017.

Roy Chowdhury, P.:

Sen, A.:
(1) Higher School of Economics, National Research University, Moscow, Russia, April 10-23, 2017; (2)
Singapore Management University, Singapore, April 29-May 06, 2017; (3) University of Padua,
Department of Economics and Management, Italy, June 03-16, 2017; (4) University of Lausanne,
Switzerland, September 14-17, 2017.

Somanathan, M.:
(1) Tufts University, USA, July 17-22 2017; (2) 11th Annual Meeting, Environment for Development
Initiative (EfD), Addis Ababa, Ethiopia, October 26-30, 2017; (3) REDD+ SANDEE Workshop,
Kathmandu, Nepal, December 06-12, 2017; (4) SANDEE Steering Committee Meeting and 34th

Economics Analysis Unit, Bangalore

Rajashekara, H.M.:
(1) IEEE International Geoscience and Remote Sensing Symposium 2017, Fort Worth, Texas, USA,

Swaminathan, M.:
(1) Agriculture, Nutrition and Health Scientific Symposium and Academy Week, Kathmandu, Nepal,
July 8, 2017; (2) University of Pretoria, Pretoria, South Africa, July 17-21, 2017; (3) Global Youth
Institute, Borlaung Dialogues USA, October 17–25, 2017; (4) University of Wageningen, Wageningen,
Netherlands, March 06-08, 2018.

Statistical Quality Control and Operations Research Division

SQC & OR Unit, Delhi

Neogy, S.K.:
(1) 28th International Conference on Game Theory, Stony Brook, USA, July 17-21, 2017.
Editorial and other Assignments

SQC & OR Unit, Bangalore

Perumallu, P.K.:

Ray, S.:

SQC & OR Unit, Mumbai

Sarkar, A.:
(1) M/s Tanfeeth, Dubai, July 30-August 04, 2017.

Center for Soft Computing Research, Kolkata

Ghosh, K.:

Pal S.K.:
(1) Hong Kong Baptist University, Hong Kong and Guangdong University of Technology, China, May 13-21, 2017; (2) University of Warmia and Mazury, Olsztyn, Poland, June 30-July 07, 2017; (3) University of Naples, Parthenope, Naples, and University of Genoa, Italy, November 19-27, 2017.

SCIENTIFIC ASSIGNMENTS/Academic Visits in India

Theoretical Statistics and Mathematics Division

Stat-Math Unit, Kolkata

Biswas, K.:
(1) IISER, Pune, July 24-29, 2017; (2) ICTS, Bangalore, November 27-30, 2017.

Bandyopadhyay, P.:
(1) RIE, Mysore, May 18-21, 2017; (2) Visvesvaraya Technological University, Belagavi. June 22-26, 2017; (3) IIT, Bombay, October 11-15, 2017.

Dutta, A.K.:
(1) Ramakrishna Mission Institute of Culture, April 08, 22, 25, 29, and May 06, 11-13, 16, 20, 23-24, 26, 2017; (2) Jadavpur University, Kolkata, July 10, 2017; (3) Dept. of Statistics and Informatics, Aliah University, Kolkata October 16, 2017; (4) IIT Gandhinagar, December 04-05, 2017; (5) Indian Association for the Cultivation of Science, Kolkata, February 28, 2018; (6) IGNCA, New Delhi, March 06, 2018.
Datta, M.: 
(1) NISER, Bhubaneswar, July 10-22, 2017; (2) ICTS, Bengaluru, December 25, 2017-January 04, 2018; (3) IISER, Kolkata, March 15, 2018.

Gupta, N.: 
(1) DEFRAG, Birla Institute of Technology, Pilani, February 22; (2) 2018DMS symposium, Kolkata, March 05, 2018.

Ray, S K.: 
(1) IIT, Patna, May 14-15, 2017; (2) IISc, Bangalore, December 11-13, 2017; (3) NISER, Bhubaneswar, March 05 -08, 2018; (4) IIT, Bombay, March 18 -23, 2018.

Stat-Math Unit, Delhi

Bhatt, A G: 
(1) IGIDR, Mumbai, September 01-03, 2017; (2) IISA International Conference on Statistics, Hyderabad, December 28 – 29, 2017.

Dewan, I: 

Jain, T: 
(1) Department of Mathematics, University of Delhi, May 01- 02, 2017; (2) Indian Academy of Science, Bangalore, September 06, 2017; (3) Dr. B.R. Ambedkar National Institute of Technology, Jalandhar, November 30-December 02, 2017.

Laishram, S: 
(1) Ramjas College, Delhi University, April 26-28, 2017; (2) North-Eastern Hill University, Shillong, June 30-July 07, 2017; (3) University of Hyderabad, July 28-August 01, 2017; (4) Harish-Chandra Research Institute, Allahabad, September 04-07, 2017; (5) IIT, Delhi, December 11-16, 2017; (6) IIT Ropar, December 22-25, 2017; (7) NISER, Bhubaneswar, February 08-09, 2018; (8) Kerala School of Mathematics, Manipur University, Imphal, February 26-March 03, 2018; (9) University of Hyderabad, March 19-20, 2018.

Nandi, S: 

Sarkar, A: 
(1) IISC, Bangalore, January 08-12, 2018.

Sarkar, D: 
(1) IGIDR, Mumbai, September 01-03, 2017.

Thakur, M: 
(1) IISER, Mohali, December 18- 23, 2017.

Stat-Math Unit, Bangalore

Rajarama Bhat, B.V.: 
(1) Indian Women and Mathematics Conference, IISc, Bangalore, July 13-15, 2017; (2) Conference on Functional Analysis, IIT, Bombay, October 12-15, 2017; (3) Nominee of UGC (for FIST funding
Editorial and other Assignments

(1) TIFR, Mumbai, April 10-14, 2017; (2) Topological Dynamics in Advanced Instructional School (AIS) on Ergodic Theory and Dynamical Systems (ETDS), IIT, Delhi, December 06-09, 2017.


Applied Statistics Division

Applied Statistics Unit, Kolkata


Interdisciplinary Statistical Research Unit, Kolkata

Ghosh, A.:  
(1) Indraprastha Institute of Information Technology, Delhi, October 09-16, 2017; (2) 83rd Annual Conference of Indian Mathematical Society (IMS), Sri Venkateswara University, Tirupati, December 10-17, 2017; (3) International Indian Statistical Association (IISA) International Conference on Statistics, Hyderabad, December 27-31, 2017.

Pal, A.:  

Applied Statistics Unit, Chennai

Sudheesh, K.K.:  
(1) Velammal College of Engineering and Technology, Madurai, April 04, 2017; (2) Anna Institute of Management, Chennai, Tamil Nadu, India, April 24-25 and 28, 2017; (3) 32nd Annual Conference of the RMS, Belagavi, Karnataka, June 24, 2017; (4) CUSAT, Kochi, Kerala, August 30, 2017; (5) University of Hyderabad, October 16, 2017; (6) Maharajas College, Ernakulam, December 08, 2017; (7) Workshop Statistical Methods in Finance 2017, Chennai Mathematical Institute, Chennai, December 16-19, 2017; (8) IISA Conference, Hyderabad, December 28-30, 2017.

Jyethi, D.S.:  

Maitra, S.:  
(1) Faculty Development Program, KIIT University, Bhubaneshwar, June 28-29, 2017; (2) Faculty Development Program, Department of Computer Science and Engineering, Tezpur University, Tezpur, December 27-28, 2017; (3) Training and Placement Cell, School of Engineering, Tezpur University, Tezpur, February 14-March 07, 2018.

Ramesh, A.:  
(1) 35th Annual Conference of Indian Society for Medical Statistics, Lucknow, Uttar Pradesh, November 02-04, 2017.

Applied and Official Statistics Unit, Tezpur

Chungkham, H.S.:  

Computer and Communication Sciences Division

Advanced Computing and Microelectronics Unit, Kolkata

Das, N:  
(1) 29th GISFI Standardization Series Meeting and IEEE 5G Summit, Bhubaneswar, August 17 -18, 2017; (2) 19th International Conference on Distributed Computing and Networking (ICDCN ’18), IIT, BHU, January 04-07, 2018; (3) 5th International Doctoral Symposium on Applied Computation and Security Systems (ACSS-2018), Kolkata, February 09-10, 2018.
Editorial and other Assignments


**Computer Vision and Pattern Recognition Unit, Kolkata**


Mitra, M.: (1) Invited talk, Department of Computer Science, Calcutta University, July 04, 2017; (2) Doctoral Committee Meeting, Department of Information Technology, IIEST, Shibpur, July 31, & September 05, 2017; (3) Department of Statistics, Calcutta University, March 17, 2018.

**Electronics and Communication Sciences Unit, Kolkata**

Chanda, B.: (1) Faculty Development Programme on Big Data Analytics and Machine Learning, Techno India, Salt Lake, July 06, 2017; (2) AICTE-QIP Short Term Course on Biomedical Data Analytics (BioMedicS-2017), IIT, Kharagpur, September 11-17, 2017; (3) AICTE sponsored Faculty Development Programme on Recent Developments in Artificial Intelligence and Robotics, 2017; (4) Narula Institute of Technology, Agarpara, January 03-13, 2018; (6) 3rd Workshop on Computing: Theory and Applications, NIT, Meghalaya, February 19-24, 2018; (7) IIIT, Allahabad, March 21-22, 2018.


Mukherjee, D.P.: (1) Medical Image Processing, Department of Computer Science and Engineering, Tripura University, May 05, 2017; (2) Machine Learning, Capital One, Bangalore, June 20-21, 2017; (3) Machine Learning, UGC Workshop on Big Data Analytics, Bir Bikram Memorial College, Tripura, July 16, 2017; (4) Emotion Recognition and Synthesis, Short term course on Biometrics, NIT, Durgapur, August 07, 2017; (5) Tutorial on Image Processing, SIAM Workshop, VIT Vellore September 09, 2017; (6) Shape Synthesis, IIIT Sri City, Chittor, September 11, 2017; (7) Machine Learning for Computer Vision,

Pal, N.R:
(1) International Conference on Computational Intelligence: Theories, Applications and Future Directions, Indian Institute of Technology Kanpur, December 06-08, 2017.

**Machine Intelligence Unit, Kolkata**

Bandyopadhyay, S.:

Ghosh, A:
(1) 5th IIMA International Conference on Advanced Data Analysis, Business Analytics and Intelligence, Ahmedabad, April 08-09, 2017; (2) National Workshop On Remote Sensing And Signal Processing, Guwahati, Assam, May 15-16, 2017; (3) International Conference On Communication, Devices and Networking, Sikkim, June 03-05, 2017; (4) B.P Poddar College, Kolkata, August 09, 2017; (5) Workshop on Big Data Analytics, Bangalore, August, 24, 2017; (6) Coimbatore University, Coimbatore, August 27-28, 2017; (7) DST Meeting, New Delhi, September 25, 2017 (8) IISc Bangalore, October 03, 2017; (9) IISF, Ministry of Arts and Sciences, Delhi, October 16, 2017; (10) Latest Advances in Machine Learning and Data Science, October 25-26, 2017; (11) DST meeting, IIT, Kharagpur, November 04, 2017; (12) RCCIIT, Kolkata, November 08, 2017; (13) Kalinga Institute Of Industrial Technology, Bhubaneswar, November 16, 2017; (14) Chandaben Mohanbhai Patel Institute of Computer Applications, December 01, 2017; (15) DEITY Meeting, New Delhi, December 08, 2017 and January 18, 2018; (16) NIT, Silchar, Silchar, January 22, 2018; (17) Pune University, Pune, February 05, 2018; (18) NIT, Bhopal, February 06-07, 2018; (19) 4th International Conference on Harmony Search, Soft Computing And Applications, Gurgaon, Harayana, February 08, 2018.

Ghosh, K.:
(1) MCA Major Project Viva-Voce, Department of Computer Applications, NEHU, Meghalaya, July 11-12, 2017; (2) ISEA Sponsored Short Term Course on Biometrics, NIT, Durgapur, August 07-11, 2017; (3) Symposium on 150th Birth Anniversary of Madam Curie, Vivekananda College, Kolkata, November 01, 2017; (4) 3rd Workshop on Computing: Theory and Applications, NIT, Meghalaya, February 19-24, 2018.

Maji, P.:
(1) Workshop on Machine Learning and Pattern Analysis, St. Thomas College of Engineering and Technology, Kolkata, June 2017; (2) Short Term Course on Machine Learning in Computer Vision and Pattern Recognition, NIT, Durgapur, February 2018; (3) International Conference on the Networked Digital Earth, Kharagpur, March 2018.
Mitra, S.:  
(1) Member, Board of Studies, Dept. of Computer Science & Engineering, Tezpur University, 2017-18;  
(2) Member, Board of Studies, Dept. of Information Technology, Govt. College of Engineering and Ceramic Technology, Kolkata, 2017-18;  
(3) Member, PG Board of Studies, Surendranath College, 2018;  
(4) Chair, IEEE CIS Kolkata Chapter, 2017-18;  
(5) Short Term Training Program, Nirma University, Ahmedabad, July 01, 2017;  
(6) Faculty Development Program, RCCIIT, Kolkata, July 20, 2017;  
(7) INAE Youth Conclave, Jaipur, August 12, 2017;  
(8) 2nd International Conference on Applied Soft Computing and Communication Networks (ACN'17), Manipal, September 13, 2017;  
(8) 1st International Symposium on Signal and Image Processing (ISSIP 2017), CII Suresh Neotia Centre of Excellence for Leadership, Kolkata, November 01, 2017;  
(10) Expert in Brain Storming Session on NPIS, MeitY, New Delhi, December 08, 2017;  

**Systems Science and Informatics Unit, Bangalore**

Meher, S.K:  
(1) Faculty Development Program, School of Computer Science, Kalinga Institute of Industrial Technology, Bhubaneswar, Odisha, June-28-30, 2017;  
(2) Amrita School of Engineering, Bangalore Campus, July 06-09, 2017;  
(3) International Conference on Computing, Analytics and Networking (ICCAN-2017), School of Computer Science, Kalinga Institute of Industrial Technology, Bhubaneswar, Odisha, December 15-16, 2017;  
(4) International conference on current trends in advanced computing (ICCTAC), Kristu Jayanti College, Bangalore, India, February 01-02, 2018.

Sagar, B.S.D:  
(1) IIT, Bombay, 2017-18;  
(2) University of Hyderabad, 2017-18;  
(3) Indian Institute of Space Science and Technology, Trivandrum, 2017-18;  
(4) Nirma University, Ahmadabad, June 28, 2017;  
(5) IEEE Bombay GRSS Chapter, IIT, Bombay, July 19, 2017;  

**Computer Science Unit, Chennai**

Francis, M.C.:  
(1) ADMA Pre-conference Workshop on Graph Algorithms, SSN College of Engineering, Chennai, June 05, 2017;  
(2) IIT, Palakkad, January-April, 2018;  
(3) Department of Computer Science & Engineering, IIT, Kharagpur, February 04-11, 2018;  
(4) SRM Institute of Science and Technology, Chennai, February 14, 2018;  
(5) National Workshop on Graph Coloring and Algebraic Graph Theory, Pondicherry University, March 06, 2018.

Karthick, T.:  
(2) 13th Pre-conference school on Graph Algorithms, SSN College of Engineering, Chennai, June 05–07, 2017;  
(1) Department of Mathematics, VIT University, Chennai, October 11, 2017;  
(3) International Conference in Discrete Mathematics (ICDM-2018), Periyar University, Salem, January 04-07, 2018;  
(4) International Conference in Discrete Mathematics and its Applications, Manonmaniam Sundaranar University, Tirunelveli, January 18-20, 2018;  
(5) State Level Intercollegiate Student Seminar, PG and Research Department of Mathematics, Thiagarajar College, Madurai, February 23, 2018;  
(6) National Workshop on Graph Coloring and Algebraic Graph Theory, Pondicherry University, Pondicherry, March 06-10, 2018.
Physics and Earth Sciences Division

Geological Studies Unit, Kolkata

Das, S.S.:
(1) National Seminar on Deccan Volcanism and biotic events across K/T boundary, Department of Applied Geology Dr. H.S. Gour Vishwavidyalaya, Sagar, Madhya Pradesh, October 26-28, 2017.

Sengupta, D.P.:
(1) Presidency University, Kolkata, October 25, 2017; (2) Joint Technical Session of Association of Petroleum Geologists (APG) and Society of Petroleum Geophysicist (SPG), Kolkata Chapter, ONGC, March 19, 2018.

Physics and Applied Mathematics Unit, Kolkata

Kar, G.:
(1) Department of Physics, NIT, Patna, January 23-27 and November 02-09, 2017; (2) International Conference an invited speaker on Quantum Foundations 2017 (ICQF17), NIT, Patna, December 04-09, 2017; (3) International Symposium an invited speaker on New frontiers in quantum correlations (ISNFGC18), S.N. Bose National Centre for Basic Sciences, Kolkata, January 29-February 02, 2018.

Maiti, S.K.:
(1) National Conference on Recent Trends in Condensed Matter Physics, Bose Institute, Kolkata, October 31-November 03, 2017; (2) National Conference on Frontiers of Statistical Physics, Presidency University, Kolkata, February 28, 2018.

Pal, S.:

Parashar, P.:

Roy, B.:
(1) Department of Physics, Punjab University, Chandigarh, December 05-13, 2017.

Biological Sciences Division

Human Genetics Unit, Kolkata

Chatterjee, R.:
(1) National Workshop on Microbial Genomics, Department of Biotechnology, Mizoram University, Aizwal, October 29-November 02, 2017; (2) International Conference Advances in Biological Techniques, Raja Peary Mohan College, Uttarpura, Hoogly, November 02-04, 2017; (3) 37th Annual Conference of the Indian Association for Cancer Research (IACR), Bose Institute, Kolkata,
Editorial and other Assignments


Ghosh, S.:
(1) Workshop on Consortium on Vulnerability to Externalizing Disorders and Addictions (cVEDA) National Institute of Mental Health and Neurosciences, Bangalore, January 22-24, 2018.

Mukhopadhyay, I.:
(1) East Asia Regional Conference of International Biometric Society, Puducherry, February 16-17, 2018; (2) National Conference on Mathematical and Theoretical Biology (NCMTB 2018), March 22-23, 2018.

Social Sciences Division

Economic Research Unit, Kolkata

Chakravarty, S.R.:

Kabiraj, T.:

Majumder, A.:
(1) Board of Studies, Department of Economics, Presidency University, Since 2016; (2) IIT, Kharagpur, May 04-05, 2017; (3) NIT, Durgapur, Department of Humanities & Social Sciences, June 28, 2017.

Pal, M.:
(1) North Eastern Hill University, Shillong, Meghalaya, July 13, and 20 September 20, 2017; (2) Nabagram Hiralal Paul College, November 24, 2017; (3) Xavier University Bhubaneswar, August 02, September 11-14, October 08-18, November 01-09, 2017; (4) Research Advisory Committee of National Tea Research Foundation, 2018-19.

Sarkar, N.:
(1) The WB National University of Juridical Sciences, Kolkata, April 02, 2017 and March 05, 2018; (2) Assam University, Silchar, Assam, January 11-12, 2018; (3) West Bengal State University, Barasat, West Bengal, March 05, 2018; (4) The Bhawanipur Education Society College, Kolkata, March 19, 2018.

Linguistic Research Unit, Kolkata

Dasgupta, P.:
Dash, N.S.:

(1) Finalization of consolidated report on mother tongue Amarani and Konda, Office of the Registrar General-India, Language Division, Ministry of Home Affairs, Govt. of India, Kolkata, April & July, 2017; (2) Dept. of English and Foreign Languages, Tezpur University, Assam, May 19, 2017; (3) English and Foreign Languages University, Hyderabad, May 24, 2017; (4) School of Languages and Linguistics, Jadavpur University, Kolkata, May 28, June 25 & 29, 2017; (5) 23rd Himalayan Languages Symposium, Dept. of English and Foreign Languages, School of Humanities & Social Sciences, Tezpur University, Assam, July 05-07, 2017; (6) Dept. of Linguistics, Faculty of Arts, Banaras Hindu University, Varanasi, July 31, & November, 2017; (7) Translation Today: An International Journal on Translation, Paper Reviewer, August 2017; (8) Workshop on Language-Mind-Brain: Interface Studies, Humanities and Social Sciences Department, IIT, Patna, August 19-20, 2017; (9) Training Programme on Mother Tongue Survey of India (MTSI), Office of the Registrar General, Ministry of Home Affairs, Govt. of India, Kolkata, August 22-31, 2017; (10) MTIL-2017, Amrita Vishwa Vidyapeetham, Coimbatore, September 07-08, 2017; (12) Machine Translation in Indian Languages (MTIL), Amrita Vishwa Vidyapeetham, Coimbatore, September 07-08, 2017; (12) Department of Linguistics and Phonetics, School of Language Sciences, English and Foreign Languages University, Hyderabad, October, 2017; (13) Workshop on Describing and Analyzing Languages and Hands-on Training in Linguistic Tools, Dept. of English, Jadavpur University, Kolkata, November 15-16, 2017; (14) National Seminar on Applied Linguistics, Dept. of Linguistics, Osmania University, Hyderabad, November 28, 2017; (15) Workshop on Current Trends in Field Linguistics, Dept. of Linguistics, Osmania University, Hyderabad, November 29, 2017; (16) 39th International Conference of the Linguistic Society of India, Department of Humanities and Social Sciences, IIT, Patna, India, December 08-11, 2017; (17) 39th International Conference of Linguistic Society of India (ICOLSI-39), Dept. of Humanities and Social Sciences, IIT, Patna, December 10, 2017; (18) Translation Today: An International Journal on Translation, Paper Reviewer, December 2017; (19) International Workshop on Methodological Approach to Research in Humanities, Dept. of Bangla, Aliah University, Kolkata, January 01, 2018; (20) 13th International Conference of South Asian Languages and Literatures, Central Institute of Indian Languages, Mysore, January 08-10, 2018; (21) Lipi and Literature 2018 Festival, Dept. of Odia, Ravenshaw University, Cuttack, February 03, 2018; (22) Pre-Submission Seminar for PhD, Dept. of Computer Science and Engineering, Jadavpur University, Kolkata, February 05, 2018; (23) Collection of sentences from Kurdmali and Birhor speech communities in the districts of Purulia, West Bengal, February 20-23, 2018; (24) 6th International Conference on Endangered and Lesser Known Languages, Central Institute of Indian Languages, Mysore, February 21-23, 2018; (25) Seminar cum workshop on Endangered Languages and Language Documentation in India, Dept. of Linguistics, University of Calcutta, February 28, 2018; (26) Central Institute of Indian Languages, Mysore, March 07-09, 2018; (27) Translation and Knowledge Society - A Conference, Workshop and Translation, NTM, CIIL, Mysore, March 07-09, 2018; (28) 8th National Conference on Indian Language Computing, Department of Computer Applications, CUSAT, Kochi, March 16-17, 2018.

Psychology Research Unit, Kolkata

Bhattacharya, H.:

(1) 7th InSPA International Conference, Mysore, November 09-11, 2017.

Chatterjee, G.:

(1) Panjabi University, Patiala, Punjab, December 04-06, 2017; (2) Indian Institute of Science, Bangalore, December 27-29, 2017; (3) HBCSE, TIFR, Maharashtra, February 26-28, 2018.

Dutta Roy, D.:

(1) Centre for Science of Student Learning, Delhi, August 01-September 31, 2017; (2) University of Calcutta, Kolkata, August 04, & 07-08, 2017; (3) Indian Institute of Psychometry, Kolkata, August 24, 2017; (4) Ali Yavar Jung National Institute of Speech and Hearing Disabilities, Kolkata, August 29-September 06, 2017; (5) Department of Psychology, University of Calcutta, Kolkata, September 08-09, 2017; (6) IAHP, Lucknow, November 11, 2017; (7) Centre for Health Psychology, School of
Editorial and other Assignments

Medical Sciences, University of Hyderabad, November 27, 2017; (8) NAOP, IIT, Kharagpur, December 21-24, 2017; (9) P.G. College, Chandigarh, January 12-14, 2018; (12) NIEPID, Kolkata, January 30, 2018.

Sampling and Official Statistics Unit, Kolkata

Chakraborty, A.B.:

Chattopadhyay, N.:

Chaudhury, P.:

Dihidar, K:
(1) Assessor, Kalyani University, 2017.

Kar, A:
(1) Technical consultancy for the NABARD All India Rural Financial Inclusion Survey (NAFIS), June 2016-July 2018; (2) Member of the Committee on Real Sector Statistics constituted by the National Statistical Commission April 2016-July 2018; (3) Member of the Working Group on NSS 73rd Round of Ministry of Statistics and Programme Implementation, Govt. of India August 2014-March 2018; (4) Member of the Working Group on NSS 74th Round Ministry of Statistics and Programme Implementation, Govt. of India, Since October 2015.

Mitra, S.:
(1) International Conference on Public Policy and Management, Centre for Public Policy, Indian Institute of Management, Bangalore, August 07-08, 2017; (2) IFMR-Tamil Nadu Government Conference, September 07, 2017.

Mukherjee, D.:
(1) Working Group for the 74th round of NSS, NSSO, since 2015; (2) Studies in Microeconomics, India, Since 2015; (3) Expert Committee on Disclosure Control, NSSO, Since 2015.

Sociological Research Unit, Kolkata

Bharati, S:
(1) 105th Indian Science Congress, Manipur University, Imphal, March 16-20, 2018.

Jana, R.:
(1) Faculty Centre for Integrated Rural Development and Management (IRDM), Ramakrishna Mission Vivekananda University (RKMVU), Narendrapur, West Bengal, Since 2012.

Economics and Planning Unit, Delhi

Afridi, F.:
(1) IGC Conference, Delhi, July 13, 2017; (2) Indian School of Business, Human Capital Workshop, Hyderabad, August 10-11, 2017; (3) Mumbai School of Economics, December 16, 2017; (4) Australia-India Workshop, Delhi, December 21, 2017; (5) IIM Kolkata, CSSSC, Kolkata, January 10-12, 2018.
Bishnu M.:  
(1) CECFEE Annual Workshop, Udaipur, Rajasthan, November 16-17, 2017.

Ghate, C:  
(1) Board of Studies, Department of Economics, Shiv Nadar University, Dadri, Uttar Pradesh, March 2018 onwards; (2) RBI, Mumbai, April 05-06, June 05-07, 23, July 17-18, July 31- August 02, 31, September 08, October 03-04, December 05-06, 2017; (4) 11th Statistics Day Conference, Reserve Bank of India, July 04, 2017; (5) CAFRAL, RBI, Mumbai, Seminars presentation, December 07, 2017; (6) Training programme on Macroeconomics, RBI Mumbai, December 08-14, 2017; (7) International Conference on Economics and Finance, BITS – Pilani, Goa Campus, February 16-17, 2018; (8) Economic Theory and Policy Conference Centre for Development Studies, Thiruvananthapuram, February 22-23, 2018; (9) International Conference on Globalization and Development, Department of Economics & Politics, Visva-Bharati Santiniketan, February 24, 2018; (10) Presidency University, Calcutta, February 27, 2018; (11) IIM, Kolkata, February 26, 2018.

Mishra, D.:  
(1) IIM Bangalore, January 12, 2017.

Ramaswami, B.:  
(1) Symposium, IGIDR, December 08, 2017.

Ray, T.:  
(1) Ashoka University, Sonepat, Haryana, July 28-29, 2017; (2) IEA-IGIDR Conference on Social Sector Development in India: Emerging Issues and Policy Perspectives, Indira Gandhi Institute of Development Research, Mumbai, October 06-07, 2017; (3) St. Stephen’s College, University of Delhi, September 15, 2017; (4) National University of Educational Planning and Administration (NUEPA), New Delhi, March 05, 2018.

Roy Chowdhury, P.:  

Somanathan, E.:  
(1) Ashoka University, SERI conference, July 28-29, 2017; (2) Madhya Pradesh, August 03-04, 2017; (3) IISER, Bhopal, August 05, 2017; (4) Eastern UP, October 12-13, 2017; (5) InSEE Conference, Thrisur, Kerala, November 07-08, 2017; (6) Amrita University, Coimbatore, Tamil Nadu, November 09, 2017; (7) CECFEE Workshop, Udaipur, Rajasthan, November 17-18, 2017.

**Economic Analysis Unit, Bangalore**

Swaminathan, M.:  
(1) Selection of Agricultural Commodities for Karnataka, Fiscal Policy Institute, Govt. of Karnataka, May, 2017; (2) A.P. Rythu Sangham (AIKS), Kakinada, July 10-12, 2017; (3) 77th Annual Conference of the Indian Society of Agricultural Economics, Guwahati, October 12-14, 2017; (4) National Consultation on Political Economy of Gender and Energy, Indian International Centre, New Delhi, November 01, 2017; (5) Workshop on Contemporary Rural Issues in India, Cherthala, Kerala, December 04-05, 2017; (6) NITI Aayog, Consultation on Leveraging Agriculture for Nutrition, January 30, 2018.

**Statistical Quality Control and Operations Research Division**

**SQC & OR Unit, Kolkata**

Bandyopadhyay, A:  
(1) Presentation, Secretariat, Chennai, July 03, 2017; (2) Additional Chief Secretary, Government of Tamil Nadu, November 03, 2017; (3) Principal Secretary to the Honourable Prime Minister, Prime Minister’s Office, New Delhi, January 22, 2018.
Editorial and other Assignments

Chakraborty, A.K.:

Das A.K.:

Mukhopadhyay, A.R.:

Manna, D.K.:

Sett, R:

SQC & OR Unit, Delhi

Chakravorty, R.:
(1) TQM and Six Sigma, National Institute for Training and Standardization, BIS, NOIDA, U.P., November 09, 2017.

Neogy, S.K.:

SQC & OR Unit, Bangalore

Gijo, E.V.:

John, B.:
(1) Workshop on Research Methodology, KST Academy, Bangalore, July 06, 2017; (2) Faculty Development Program on Rapid Miner, Avinashilingam University, Coimbatore, July 25, 2017; (3) Workshop on Data Mining using R, PSNA College of Engineering and Technology, Dindigul, Tamil Nadu, August 10-11, 2017; (4) Faculty Development Program on Predictive Modeling using Python, Sri Ramakrishna Engineering College, Coimbatore, September 14, 2017; (5) Faculty Development Program on Predictive Modeling using Python, RMK College of Engineering and Technology, Chennai, December 06-07, 2017.

Perumallu, P.K.:
SQC & OR Unit, Chennai

Biswas, A:

SQC & OR Unit, Coimbatore

Rajagopal, A:
(1) Venkateswara Springs and Springs Ltd, Kannampalayam, Sulur, Coimbatore, Tamil Nadu, May 31 and August 07, 2017; (2) KGISL College of Arts & Science, Coimbatore, June 29, 2017; (3) Karpagam University, Coimbatore, July 01, 2017; (4) PSG College of Arts & Science, Coimbatore, September 14, 2017; (5) TIPS Global Business School, Masagoundenchtipalayam, Tamil Nadu, September 25, 2017; (6) Dr. NGP Institute of Technology at Coimbatore, September 26, 2017; (7) Bharathiar University, Coimbatore, October 20, 2017; (8) HCL organization occasion, HCL Sholinganur Campus, Chennai, December 13, 2017; (9) DFSS program with projects on New Product Development(NPD), TVS Brakes India, Padi, Tamil Nadu, January 08, 2018; (10) Kumaraguru College of Technology, January 17, 2018; (11) SAVIO, Coimbatore, January 18, 2018; (12) Design Development and sustainable methodologies, M/s. Maria Lousia, February 20, 2018; (13) KG Hospital, March 03, 2018; (14) Periyar University, Salem, March 12, 2018; (15) TIPS Global Business School, March 23, 2018.

SQC & OR Unit, Hyderabad

Subhani, S.M.:

Center for Soft Computing Research: A National Facility, Kolkata

Ghosh, K.:
(1) Faculty Development Programme, KIIT, University, Bhubaneswar, June 26-30, 2017; (2) 6th International Conference on Advances in Computing, Communications and Informatics (ICACCI 2017), Manipal University, September 13-16, 2017; (3) 3rd International Conference on Computational Intelligence and Networks (CINE 2017), Bhubaneswar, October 28, 2017; (4) Conference on Facets of Basic Sciences and Applications, Bijoy Krishna Girls’ College, Howrah, February 05-07, 2018.

Pal, S.K.:
(1) 1st International Conference on Smart Systems, Innovation and Computing (SSIC 2017), Jaipur, April 15-16, 2017; (2) NASI Council Meeting, NIPGR, New Delhi, April 21-22, 2018; (3) BOG Meeting, PDPM-IIITDM, Jabalpur, Madhya Pradesh, May 27-29, 2017; (4) NIT, Patna, May 31-June 02, 2017; (5) Promotion and Assessment Committee (PAC) Meeting, IISc, Bangalore, June 23-24, 2017; (6) 2017 INSA Jawaharlal Nehru Birth Centenary Lecture, SavitribaiPhule, Pune University, July 12, 2017; (7) NTU-India Connect program International Symposium on Computational Mathematics, Optimization and Computational Intelligence (CMOCI 2017), IIT, Indore, July 17-19, 2017; (8) National Conference on Recent Trends in Biomedical Engineering 2017 (NCRTBME’17), SRM University, Chennai, August 22-23, 2017; (9) Promotion and Assessment Committee (PAC) Meeting, IISc, Bangalore, September 22-23, 2017; (10) 1st International Conference on Data, Engineering and Applications (IDEA-2k17), Rajiv Gandhi Technical University, Bhopal, October 28-29, 2017; (11) International Conference on Information Technology and Applied Mathematics, Haldia Institute of Technology, Haldia, October 30, 2017; (12) Prof. Lotfi A. Zadeh Memorial Seminar on Fuzzy Set Theory and its Applications, National Institute of Technology, Durgapur, December 01, 2017; (13)
Editorial and other Assignments

Promotion and Assessment Committee (PAC) Meeting, IISc, Bangalore, December 07-08, 2017; (14) NASI Council Meeting, Pune, December 09-10, 2017; (15) 5th International Conference on Mining Intelligence and Knowledge Exploration (MIKE 2017), IDRBT, Hyderabad, December 13-15, 2017; (16) INAE Annual Convention, TCS Tiruseri, Chennai, December 15-16, 2017; (17) NASI Council Meeting, Allahabad, February 04-06, 2018; (18) Vishleswan 2018, Dept. of Industrial and System Engineering, IIT, Kharagpur, February 16-18, 2018; (19) INAE Kolkata Chapter, Center for Research in Nano-Science and Nano-Technology at the University of Calcutta, Salt lake Campus, Kolkata, February 28, 2018; (20) Faculty Selection Committee Meeting, IIT, Roorkee, March 04-06, 2018; (21) ABV - Indian Institute of Information Technology and Management, Gwalior, March 25-28, 2018; (22) 1st International Conference on Data Analytics & Learning (DAL-2018), Mysore University, March 30, 2018.
Regional Mathematical Olympiad 2017-18 in West Bengal was organized by Indian Statistical Institute, Kolkata, and Homi Bhabha Centre for Science Education (HBCSE), on behalf of the National Board for Higher Mathematics (NBHM) of the Dept. of Atomic Energy (DAE), Govt. of India. Prior to RMO 2017, West Bengal held a Pre-RMO examination to select students to appear for RMO. This has been organized by IAPT. Based on their performance, HBCSE prepared a list of 519 candidates. The exam was held at the Hindu School on 8th October 2017. The number of candidates appeared for the RMO examination is 471.

The RMO Committee at the Institute graded the papers for RMO 2017, scrutinized and re-graded upon requests for re-evaluation, and selected top 30 plus 5 girl candidates to appear for INMO 2018 from West Bengal. This decision was communicated to HBCSE, and the final results were declared centrally. The highest score from West Bengal in RMO 2017 was 102 (out of 102), and the top 30 candidates got greater than or equal to 55.

These 35 selected candidates were invited to take part in a week-long INMO-TC at Indian Statistical Institute, Kolkata, held during 6th, 7th, 13th and 14th January 2018, where the students were exposed to advanced problem solving skills by ISI Kolkata faculty members and eminent IMO-TC instructors. Finally, these candidates from West Bengal participated in INMO 2018, including former INMO awardees. The INMO examination was held on 21st January at the Indian Statistical Institute, Kolkata.

Regional Mathematical Olympiads (RMO) 2017: Karnataka Region

The mathematical Olympiad activity in Karnataka has been coordinated by the Bangalore Centre of ISI for several years with Dr. Manish Kumar as the regional coordinator for Karnataka. In 2017, the number of students who were selected after PRMO were 623 to take up the Regional Mathematical Olympiad (RMO) for Karnataka region. The exam was held on 8th October, 2017, in 2 centres across the state. With the help of some faculty members at ISI Bangalore, some post-doctoral fellows and research scholars, 520 answer scripts of RMO were evaluated at ISI Bangalore. Thirty-five students qualified to write the national level test Indian National Mathematical Olympiad (INMO). A week long training camp was organized at ISI Bangalore for a total of 55 students, to make them familiar with advanced problem solving techniques before they appear for the INMO. Several distinguished speakers were invited for this purpose. Participants were provided with food and accommodation at ISI Bangalore. The INMO was held on 17-20 January, 2018 at the Bangalore centre. Prof. B. Sury is the National Co-ordinator for the Mathematics Olympiad programme in India from July 1, 2016.

The Madhava mathematics competition for undergraduate students is held in various parts of India. This year also, ISI Bangalore coordinated the activities. Dr. Jaydeb Sarkar was the coordinator. The exam was held on 7th of January, 2018 in ISI, Bangalore. 203 college students from Bangalore registered for the exam. Again, with the assistance of postdoctoral fellows and research scholars, the scripts were evaluated and sent to the national coordinator.
PART III. ADMINISTRATION AND OFFICE BEARERS

10. GENERAL ADMINISTRATION

Administrative Services Division

1. The Administrative Services Division at the Headquarters caters to the various needs of the Scientific Workers in all the Scientific Units of the Institute engaged in various scientific, research and academic activities and provides them with necessary infrastructural facilities in their pursuit of excellence. The centres at Delhi, Bangalore, Chennai and Tezpur, each having a number of scientific units, by and large are getting administrative support from the administrative units/sections there. The Administrative Services Divisions of the Institute has the following units at the Headquarters in Kolkata:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Unit</th>
<th>Sl. No.</th>
<th>Name of the Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Accounts Section</td>
<td>17.</td>
<td>Import &amp; Travel Cell</td>
</tr>
<tr>
<td>2.</td>
<td>Audio-Visual Unit</td>
<td>18.</td>
<td>Internal Audit Cell</td>
</tr>
<tr>
<td>3.</td>
<td>Binding Unit</td>
<td>19.</td>
<td>Legal Cell</td>
</tr>
<tr>
<td>4.</td>
<td>Canteen</td>
<td>20.</td>
<td>Medical Expenses Reimbursement Unit</td>
</tr>
<tr>
<td>5.</td>
<td>Cash</td>
<td>21.</td>
<td>Medical Welfare Unit</td>
</tr>
<tr>
<td>7.</td>
<td>Central Office &amp; Despatch Unit</td>
<td>23.</td>
<td>Provident Fund Unit</td>
</tr>
<tr>
<td>8.</td>
<td>Central Stores &amp; Tailoring Unit</td>
<td>24.</td>
<td>Public Relations Unit</td>
</tr>
<tr>
<td>9.</td>
<td>Council Section</td>
<td>25.</td>
<td>Printing and Publication Unit</td>
</tr>
<tr>
<td>11.</td>
<td>Electrical Maintenance Unit</td>
<td>27.</td>
<td>Retirement Benefit Cell</td>
</tr>
<tr>
<td>12.</td>
<td>Engineering Unit</td>
<td>28.</td>
<td>Sankhya Office</td>
</tr>
<tr>
<td>13.</td>
<td>Estate Office</td>
<td>29.</td>
<td>Security Unit</td>
</tr>
<tr>
<td>14.</td>
<td>Guest House</td>
<td>30.</td>
<td>Telephone Unit</td>
</tr>
<tr>
<td>15.</td>
<td>Hostels</td>
<td>31.</td>
<td>Transport Unit</td>
</tr>
</tbody>
</table>

2. Apart from the above mentioned Units, there are few cells dealing with Budget, and other issues to take care of the specific needs of the Institute. The Administrative Services Division also looks after the running of Hostels for Students, Research Scholars and International Statistical Education Centre (ISEC) Trainees and also the running of Canteens for the workers and students of the Institute. The other outlying Units are controlled directly by the Headquarters at Kolkata. The Administrative Services Division takes the responsibility for all new constructional activities of the Institute at its Headquarters and also at outlying centres/branches. A brief report on the construction and other activities during the year is narrated in the subsequent paragraphs.

The Administrative activities in the four Centres, namely Delhi, Bangalore, Chennai and North East Centre at Tezpur and in other outlying branches of the Institute and Giridih Office, are more or less similar to the Headquarters but on a much smaller scale.

3. Office bearers of the Institute Administration during the year:

- **Director**: Prof. Sanghamitra Bandyopadhyay
- **Professors-in-Charge of Scientific Divisions**: Prof. Arup Bose (Theoretical Statistics & Mathematics)
  Prof. Ayanendranath Basu (Applied Statistics)
4. List of workers joined/ retired/ voluntarily retired/ resigned/ terminated/ died during the year

A. Appointments

(i) Scientific / Technical Workers

<table>
<thead>
<tr>
<th>Srl. No.</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Kingshook Biswas</td>
</tr>
<tr>
<td>2.</td>
<td>Mathew Joseph</td>
</tr>
<tr>
<td>3.</td>
<td>Sankar Sarkar</td>
</tr>
<tr>
<td>4.</td>
<td>Mridu Prabal Goswami</td>
</tr>
<tr>
<td>5.</td>
<td>Kishor Chandra Satpathy</td>
</tr>
</tbody>
</table>

(ii) Non-Scientific Workers

<table>
<thead>
<tr>
<th>Srl. No.</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>T. Santosh</td>
</tr>
<tr>
<td>2.</td>
<td>Rahul Kumar Banerjee</td>
</tr>
</tbody>
</table>
### B. Retirement/Voluntary Retirement:

#### (i) Scientific & Technical Workers

<table>
<thead>
<tr>
<th>Srl. No.</th>
<th>Name</th>
<th>Srl. No.</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Tapas Kumar Chandra</td>
<td>13.</td>
<td>Ratan Dasgupta</td>
</tr>
<tr>
<td>4.</td>
<td>Sutapa Saha</td>
<td>15.</td>
<td>Sadhana Majumder</td>
</tr>
<tr>
<td>5.</td>
<td>Partha Pratim Majumder</td>
<td>16.</td>
<td>Phul Kumari Devi</td>
</tr>
<tr>
<td>6.</td>
<td>Anil Kumar Choudhuri</td>
<td>17.</td>
<td>Amiya Kr. Das</td>
</tr>
</tbody>
</table>

#### (ii) Non-Scientific Workers

<table>
<thead>
<tr>
<th>Srl. No.</th>
<th>Name</th>
<th>Srl. No.</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.</td>
<td>Pannalal Bhattacharya</td>
<td>22.</td>
<td>Joydev Chatterjee</td>
</tr>
<tr>
<td>6.</td>
<td>A. Aswatha Reddy</td>
<td>23.</td>
<td>Panchu Gopal Rajbhar</td>
</tr>
<tr>
<td>8.</td>
<td>Sangal Roy</td>
<td>25.</td>
<td>D. Dharmappa</td>
</tr>
<tr>
<td>11.</td>
<td>Ranjit Kumar</td>
<td>28.</td>
<td>Timal Mahato</td>
</tr>
<tr>
<td>13.</td>
<td>Bimalangshu Chakraborty</td>
<td>30.</td>
<td>Subhas Kumar Ghosh</td>
</tr>
<tr>
<td>15.</td>
<td>Giridhari Sinha</td>
<td>32.</td>
<td>Tika Ram Tiwari</td>
</tr>
<tr>
<td>17.</td>
<td>Swapan De</td>
<td>34.</td>
<td>Lalmoni Dobriyal</td>
</tr>
</tbody>
</table>

### C. Resignation/Discontinuation of Deputation

#### (i) Non-Scientific Worker

<table>
<thead>
<tr>
<th>Srl. No.</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Col Soumyabrata Chakraborty</td>
</tr>
</tbody>
</table>
D. Death

(i) Scientific Worker

<table>
<thead>
<tr>
<th>Srl. No.</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Arun Kumar Adhikary</td>
</tr>
<tr>
<td>2.</td>
<td>C.A. Murthy</td>
</tr>
</tbody>
</table>

(ii) Non-Scientific Worker

<table>
<thead>
<tr>
<th>Srl. No.</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Kabiraj Mallick</td>
</tr>
<tr>
<td>2.</td>
<td>Subir Kr. Acharya</td>
</tr>
<tr>
<td>3.</td>
<td>Debasish De</td>
</tr>
<tr>
<td>4.</td>
<td>Raju Marandi</td>
</tr>
</tbody>
</table>

5. Number of workers in the Institute as on 31st March 2018

Number of workers in the Institute as on 31st March 2018:

(i) Scientific and Technical Workers - 373

(ii) Non-Scientific Workers - 434

Total : 807

6. Breakup of manpower by Gender, Social Category and Disability group as on 31st March 2018

<table>
<thead>
<tr>
<th>Total Strength</th>
<th>Persons with Disabilities (PWD)</th>
<th>Scheduled Caste (SC)</th>
<th>Scheduled Tribe (ST)</th>
<th>Other Backward Classes (OBC)</th>
<th>Minorities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>686</td>
<td>04</td>
<td>91</td>
<td>21</td>
<td>62</td>
</tr>
<tr>
<td>Female</td>
<td>121</td>
<td>Nil</td>
<td>11</td>
<td>01</td>
<td>03</td>
</tr>
<tr>
<td>Total</td>
<td>807</td>
<td>04</td>
<td>102</td>
<td>22</td>
<td>65</td>
</tr>
</tbody>
</table>

7. Annual Return on Cases of Sexual Harassment

1. Number of complaints of sexual harassment received in the year

Headquarters - 1
Bangalore Centre - 1

2. Number of complaints disposed off during the year 2017-18.

Headquarters - Nil
Bangalore Centre - 1

3. Number of cases pending for more than 90 days.

Nil

4. Number of workshops on awareness programmes against sexual harassment conducted during the year.

Nil


Bangalore Centre - Situation resolved through counseling and barring the concerned party from the Hostel.
8. Applications received and action taken by the Institute under RTI Act, 2005

Name of the Appellate Authority : Prof. Sanghamitra Bandyopadhyay, Director, ISI Kolkata
Name of Central Public Information Officer: Shri A.K. Biswas, Dy. Chief Executive (Admn.), ISI Kolkata

The summary statement in this regard for the year 2017-18 is given below: -

<table>
<thead>
<tr>
<th>No. of Applications received</th>
<th>No. of cases accepted</th>
<th>Decisions where requests were fully or partially rejected</th>
<th>No. of decisions from Appellate Authority</th>
<th>C I C decision</th>
<th>Amount collected (Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Fully rejected, Partially rejected</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>114</td>
<td>114</td>
<td>Nil, Nil</td>
<td>5</td>
<td>3</td>
<td>NIL</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>720</td>
</tr>
</tbody>
</table>

9. Budget and Finance

For the year 2017-2018, Section 8(1) Committee recommended Rs.25284.98 lakhs under salary head Rs.18182.74 lakhs under ‘Creation of Assets’ head and Rs.6336.35 lakhs under General Head (BE). The Government approved a sum of Rs.20398.00 lakhs, Rs.4867.00 lakhs and Rs.2950.00 lakhs for salary, capital and general expenditure respectively. At the revised estimate stage, the Institute sought for a grant of Rs.23067.00 lakhs, Rs.6667.00 lakhs and Rs.4095.00 lakhs under salary, capital and general respectively, which was also recommended by the Section 8(1) Committee. The Government sanctioned a grant equal to that of the BE level under salary, capital & general heads. The revenue expenditure was more by Rs.954.75 lakhs from the fund allotted by the Ministry and Miscellaneous receipt. Capital Expenditure was Rs.1303.69 Lakhs less than the fund allotted. The Audited Annual Accounts of the Institute for the year 2017-2018 has been furnished in Part III of this report.

10. Major Construction / Repair works taken up by the Institute during 2017-2018

A. Kolkata

R C Bose Centre for Cryptology and Security

The centre is located at Gupta Niwas campus of the Institute. Planning, Design-Engineering, Execution and overall Project Management for construction of buildings and other infrastructure of the campus was awarded to M/s NBCC as deposit work. Construction activity started in May, 2015. Construction of the Cryptology Centre (G+7), Hostel Building (G+7) and two Residential Blocks (G+10 & G+4) is in progress. Building superstructures are complete; interior & exterior finishing works and building-services like sanitary & plumbing, electrical, HVAC, Fire-Fighting and suppression system are in progress. Estimated project cost is about Rs. 80 crore. The project is expected to complete by September, 2018.
• **Construction of New Academic Building** - Construction of a new Academic Building (G+5) has been taken up at main campus as deposit work. M/s Bridge & Roof Co (India) Ltd is the project implementing agency. Planning, Geotechnical Investigation, Detailed Design Engineering and cost estimation have been completed. Total sanctioned cost of the building is Rs. 37.70 crore. Selection of contractor has been initiated.

• **Repair, Renovation work of R. A. Fisher Bhavan & S.N. Bose Bhavan** - Major repair and renovation of these two buildings at the main campus were in progress during 2017-18. M/s Bridge & Roof is the implementing agency. Repair renovation of building external surface, structural repair, toilets including sanitary & plumbing system renovation, renovation of offices of some of the Units etc. are the scope of work. Work is expected to be complete by December 2018.

**B. Delhi**

(i) Land and construction:

(ii) Major civil and electrical works during the period April 01, 2017 to March 31, 2018 are :-

<table>
<thead>
<tr>
<th>S.No</th>
<th>Description of Work</th>
<th>Total Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Renovation, water proofing and fencing work</td>
<td>Rs.13,56,700</td>
</tr>
<tr>
<td>2.</td>
<td>Providing disabled friendly infrastructure work in progress</td>
<td>Rs. 19,84,000</td>
</tr>
<tr>
<td>3.</td>
<td>WAC Meeting held at ISI Delhi Centre dated 15/05/2017 to discuss and finalise the revised proposal/estimates submitted by CPWD.</td>
<td>-</td>
</tr>
</tbody>
</table>

(CIVIL WORKS)

<table>
<thead>
<tr>
<th>(Electrical Works)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. New Air cooked package A/C at Library buildings</td>
</tr>
<tr>
<td>2. New Earth bit work</td>
</tr>
<tr>
<td>3. New Street light pole with fittings</td>
</tr>
<tr>
<td>4. SITC of 6 KVA UPS at admin block</td>
</tr>
<tr>
<td>5. PPRU cable and DB fitting work</td>
</tr>
<tr>
<td>6. SITC of 2 ton split AC at conference room</td>
</tr>
<tr>
<td>7. SITC of 1.5 ton window AC at faculty block</td>
</tr>
</tbody>
</table>

**C. Bangalore**

Major construction / renovation works completed / undertaken by the Bangalore Centre during 2017 - 2018.

(i) Construction of Second Floor of Guest House: The structural work has been completed. The finishing works are under progress.

(ii) Construction of New Academic Building: The preliminary drawing and estimate have been submitted by NPCC Ltd. Paper notification for selection of the contractor has been completed and the selection of contractor is under process. NPCC Ltd. is in the process to obtain necessary sanctions/approvals from various departments/authorities.
Administration

(iii) Extension of Canteen Building: The necessary ground work such as identification of location, preparation of preliminary plan and estimate etc have been completed. The selection of contractor is being completed.

(iv) Construction of Vehicle Parking near Research Scholars' Hostel: The work has been successfully completed.

(v) Modernization of Fire Extinguishers: The work has been completed.

(vi) Installation of 8 passenger New Lift at Main Building: The work has been awarded to M/s Kone Elevator India Pvt. Ltd

(vii) Galvanized Steel Roof for Outdoor D G Sets, Feeder Boxes and Sump Tank: The selection process for a contractor has been completed. The work is expected to be started shortly in the next financial year.

D. Chennai

Construction:

(a) Boundary Wall: Boundary construction was successfully completed by NBCC. The final settlement and site handing over was done during November, 2017. The total length of the Boundary wall is 711.88 meters and has 479 piles.

(b) Earth Filling: Earth filling of the low lying area of our site at Karapakkam is being carried over by CPWD. The earth filling work was estimated for Rs. 6,16,80,000/- (Rupees six crores, sixteen lakhs eighty thousand only). About 50% of the work is over.

E. Tezpur

Construction of campus over 25- acre of land located at Punioni, Tezpur, started in full swing from the last quarter of 2017. Out of a total of 13 buildings, the construction activities are underway for 7 types of structures currently, namely, Administration Building, Academic Building, Boys' Hostel, Canteen, Guest House, Amenities Building, Transit Quarters (quarters for the workers). The sub-structure works of these buildings are under progress up to the plinth level, whereas for the Administration Building, further progress has been made with plinth beams and column expansion. The amount of expenditure incurred so far is Rs. 8.41 crores for the financial year 2017-18. NBCC INDIA LIMITED is the PMC of this project.

11. Society Type Activities

A. Membership: April 2017 – March 2018

During the period 50 persons became Ordinary Members of the Institute and 12 Ordinary Members became Life Members of the Institute.

The membership position as on 31 March, 2018 is as follows:

<table>
<thead>
<tr>
<th>Membership Type</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ordinary Members</td>
<td>303</td>
</tr>
<tr>
<td>Life Members</td>
<td>1038</td>
</tr>
<tr>
<td>Institutional Members</td>
<td>05</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1346</strong></td>
</tr>
</tbody>
</table>

200
B. **Finance Committee Meeting**: The Finance Committee met on 16th October, 2017. Besides the decisions taken on various financial matters, the Finance Committee recommended RE 2017-18 and BE 2018-19 (both Plan and Non-Plan) in this meeting held on 16th October, 2017. The Annual Report including Audited Statement of Accounts for the year 2016-2017 was considered and also recommended in this meeting.

C. **Council Meetings**: During the period under report (2017-18), the Council met four times on 25th May, 2017, 16th September, 2017, 15th November, 2017 and 9th March, 2018 to take decisions on various academic and administrative matters of the Institute. The Budget Proposals of the Institute both for Plan and Non-Plan (RE 2017-18 and BE 2018-19) were considered in the meeting of the Council held on 15th November, 2017, as recommended by the Finance Committee in its meeting held on 16th October, 2017. The Annual Report including the Audited Statement of Accounts for the year 2016 – 2017 was considered and approved by the Council in its meeting held on 15th November, 2017.

Please refer to the Back Cover Page and Chapter 12 for details regarding composition of the Council and different committees constituted by the Council.

D. **Annual General Meeting**: During the period under report (2017-18), the Annual General Meeting was held on 29th November, 2017. The Annual Report of the Institute for the year 2016-2017 and Audited Statement of Accounts for the year 2016-2017 together with the Auditor’s comments and replies of the Administration thereto were adopted in the meeting of the General Body held on 29th November, 2017.

12. **Awareness programmes conducted by Medical Welfare Unit**

Medical Welfare Unit caters to the Health Care need of the students, faculty, workers and their family members of Indian Statistical Institute.

- Two full time Resident Medical Officers perform regular OPD services as well as Emergency Medical Services as and when necessary.
- Specialist clinic of Eye and Psychiatry are held twice a week.
- Specialist clinic of ENT is held three days a week.
- Regular Counselling sessions by two Psychological Counsellors are held two days a week, which is availed by students and all workers and their family members.
- Retired staff and their spouses are also provided with Medical care on OPD basis.
- Some essential medicines are supplied by the Pharmacy of MWU.

Medical Welfare Unit organises various awareness programmes for the benefit of workers and students. A large number of workers and students participated in the following seminars and sensitization programmes last year.

(i) **Sensitization program on Mental Health in collaboration with Dean’s office on 08/08/2017**

Speaker: Mr Mohit Ranadip

(ii) **Depression : Let's Talk on 06/03/2018**

Speakers: Dr Jyotirmoy Samajder  
Ms Swati Mitra  
Mr Mohit Ranadip
(iii) Oral Health : An Untold Story on 26/03/2018 in association with K K Chatterjee Memorial Association (NGO)

Speaker: Dr Ramdas Chatterjee

13. Training Programme on Hindi Implementation

Shri Manoj Kr. Pandey, Sr. Administrative Officer, Official Language Cell of the Institute participated in the training programme on Hindi Implementation and received ‘Rajbhasa Abhusan’ Award by Bhartiya Bhasa Evam Sanskriti Kendra, New Delhi, on behalf of the Institute.

14. A brief description of specific achievements and functions on implementation of the Official Language Policy by the Institute during the year 2017-18

During the year 2017-18 the Official Language Cell of the Institute organized four Hindi workshops respectively in the month of June, September, December and March. Almost 128 employees of the Institute participated in these workshops. Issues like ‘Noting and Drafting and Hindi Grammar’, ‘Official Language Policy’, ‘Usefulness of Official Language in the office’, ‘Use of Indian Languages on Computer’ and ‘The importance of Hindi in today’s context’ were mainly discussed in these workshops.

During the financial year 2017-18, the Hindi Pakhwara was inaugurated by the Director of the Institute Prof. Sanghamitra Bandyopadhyay on 1st September, 2017. During the fortnight, (1st September, 2017 to 15th September, 2017) Hindi Day was celebrated on 14.09.2017 at the Institute. Indian Statistical Institute is also an active member of the Town Official Language Implementation Committee, Kolkata (Office 2).

Like the Headquarters, the Delhi Centre of the Institute also arranged workshops throughout the year and celebrated Hindi Pakhwada as well. A small Hindi library was established in the year 2016 in which daily Hindi Newspaper, few magazines and 29 Hindi Books were purchased in the first lot.
11. LIST OF MEMBERS OF THE ACADEMIC COUNCIL AND OTHER COMMITTEES OF THE INSTITUTE AS ON 31 MARCH 2018

1. Academic Council

Sanghamitra Bandyopadhyay, Director (Chairman)

Amita Pal, Dean of Studies (Convener)

A. Theoretical Statistics and Mathematics Division


B. Applied Statistics Division


C. Social Sciences Division


D. Biological Sciences Division


E. Physics and Earth Sciences Division


F. Computer and Communication Sciences Division

Administration

G. Statistical Quality Control and Operations Research Division

H. Library, Documentation and Information Sciences Division
Kishor Chandra Satpathy

I. Computer and Statistical Service Centre (CSSC)
Debashis Roy, Amitava Datta,

J. Member-Secretary, ISEC
Ayanendranath Basu

2. Other Committees of the Institute

A. Finance Committee
Director (Chairman), Government Representative (MOS & PI), Government Representative (Ministry of Finance), Professor Abhirup Sarkar, ISI Kolkata, Professor Pabitra Banik, ISI Kolkata, Professor S.M. Srivastava, ISI Kolkata, Professor Dilip Saha, ISI Kolkata, Professor Chetan Ghate, ISI Delhi, Head, Delhi Centre, Head, Bangalore Centre, Head, Chennai Centre, Sh. Somnath Ray, ISI Bangalore, Shri Samar Ray (Former PS, Finance Dept., Govt. of WB; Former Dy. Comptroller and Auditor General, Govt. of India), External Expert, External Expert (to be decided soon), Chief Executive (A&F), Sudip Chakraborty (Convener), DCE (Finance).

B. Sankhyā Editorial Committee
(i) Editor-in-chief, Sankhya, Series A and Series B:
Prof. Dipak K. Dey (University of Connecticut, Storrs, CT, U.S.A.)

(ii) Editors, Sankhyā, Series A:
Prof. Krishna B. Athreya (Iowa State University, U.S.A.), Prof. Gopal K. Basak, (Indian Statistical Institute, Kolkata), Prof. Francisco Louzada (Universidade De Sao Paulo, Brazil),

(iii) Editors, Sankhyā, Series B:
Prof. Sudipto Banerjee (University of California, Los Angles, U.S.A.), Prof. Bertrand Clarke (University of Nerbraska-Lincoln, U.S.A.), Prof. Bani Mallick (Texas A & M University, U.S.A.), Prof. Sumitra Purakayastha, (Indian Statistical Institute, Kolkata),
C. Works Advisory Committees

(i) Kolkata

Anandapran Gupta (Chairman), Former Head, Civil Department, IIT Kharagpur, Smaratij Bose (Vice-Chairman), Rajkumar Roychowdhury, Susmita Mukhopadhyay, Indranil Dasgupta, Ashis K. Chakraborty, External Expert (Civil), External Expert (Architecture), External Expert (Electrical), Chief Executive (A&F), Amal K. Biswas, Partha P. Mohanty, Amitava Mukherjee, In-Charge, EMU, In-Charge, Engg. Unit (Convener), External Expert (Environment/Pollution Control to be co-opted/invited by the Chairman when required).

(ii) Delhi

Prof. B. Bhattacharjee, Civil Engineering department, IIT Delhi (Chairman), Head ISI Delhi – Member, Mr. G. K. Taneja, Institute Engineer, IIT Delhi – Expert (Electrical), Mr. R. Upadhyay, Executive Engineer (Civil), Shri Lal Bahadur Sanskrit Vidyapeeth - Expert (Civil), Expert Architecture (to be co-opted later), Prof. Arup Pal, ISI Delhi, Prof. S. K. Neogy, ISI Delhi, Prof. Chetan Ghate, ISI Delhi, Mr. Sujan Dutta, ISI Delhi, Mr. Kaisar Alam, OSD, ISI Delhi (Convener).

(iii) Bangalore

Professor K. S. Nanjunda Rao (Chairperson); Dr K. Keshavan, External expert (Electrical Engineering); Dr S. V. Venkatesh, External expert (Civil Engineering); Head, ISI, Bangalore Centre; Head, Stat-Math Unit, ISI, Bangalore or his/her nominee; Head, DRTC, ISI, Bangalore or his/her nominee; Head, SQC & OR Unit, ISI, Bangalore or his/her nominee; Head, E.A.U., ISI, Bangalore or his/her nominee; Dr. Kaushik Majumder, ISI, Bangalore; Accounts Officer, Bangalore Centre; Shri P.C. Karan, Administrative Officer, ISI, Bangalore (Convener).

D. Ph.D. / D.Sc. Committees

(i) Statistics

Director (Chairperson), Dean of Studies, Mausumi Bose, Gopal K. Basak, Mohan Delampady, V. Padnawar, Isha Dewan, Abhay G. Bhatt, Ayanendranath Basu, C.A. Murthy, Atanu Biswas, Tapas Samanta (Convener).

(ii) Mathematics

Director (Chairperson), Dean of Studies, B. Sury, Siva Athreya, Anish Sarkar, Arup K. Pal, Mahuya Datta, Swagata K. Ray, Banasri Basu, Debashish Goswami (Convener).

(iii) Computer Science


(iv) Quantitative Economics

Director (Chairperson), Dean of Studies, Nitayananda Sarkar, Manipushpak Mitra, Prabal Roy Chowdhury, Bharat Ramaswami, Debasis Mishra, Anup Dewanji, Tarun Kabiraj (Convener).
Administration

(v) SQC & OR


E. Policy Planning and Evaluation Committee (PPEC)

Chairman of ISI Council (Chairman); Director (Vice-Chairman); Director General, CSO; Financial Advisor, MOS & PI; Professor Kalyan B. Sinha, Former Director, ISI; Professor B.L.S. Prakasa Rao, Former Director, ISI; Professor Partha P. Majumder, ISI; Professor Partha P. Chakraborty, Director, IIT Kharagpur; Professor T.S.S.R.K. Rao, Head ISI Bangalore; Professor Bharat Ramaswami, ISI Delhi; Professor Dhrubojyoti Chattopadhyay, Former Pro-VC (Acad), Calcutta University; VC Amity University; Professor Dipti P. Mukherjee, ISI (Convener).

F. Technical Advisory Committees of different Divisions

(i) Theoretical Statistics and Mathematics Division

Director, ISI (Chairperson), Professor V. Balaji. Professor Ravi Rao, Professor Indranil Biswas, Professor Tathagata Bandyopadhyay, Professor B.L.S. Prakasa Rao, Professor V.S. Borkar, Professor-in-Charge, Statistics & Mathematics Division (Convener).

(ii) Applied Statistics Division

Director, ISI (Chairperson), Professor S.P. Mukherjee, Professor Rahul Mukherjee, Professor Debasis Kundu, Professor Swadheenanda Pattanayak, Professor-in-Charge, Applied Statistics Division, (Convener).

(iii) Computer and Communication Sciences Division

Director, ISI (Chairperson); Professor Partha P. Chakrabarti, Professor Naveen Garg, Dr. Satyanarayana V. Lokam, Prof. Subhashis Chaudhuri, Dr. Ramesh Hariharan, Professor Pushpak Bhattacharya, Professor K.S. Raghavan, Professor-in-Charge, Computer & Communication Sciences Division (Convener).

(iv) Physics and Earth Sciences Division

Director, ISI (Chairperson), Professor Ashok Sahni, Professor S.K. Tandon, Professor Sudipta Sengupta, Prof. M. Lakshmanan, Professor Indrani Bose, Prof. C.S.P. Ojha, Professor-in-Charge, Physics & Earth Sciences Division (Convener).

(v) Biological Sciences Division

Director, ISI (Chairperson), Professor Nitai P. Bhattacharyya, Professor Himanshu Pathak, Dr. Giriraj Chandak, Dr. A.R. Sharma, Professor S.P. Singh, Professor Aditya Chatterjee, Professor-in-Charge, Biological Sciences Division (Convener).

(vi) Social Sciences Division

Director, ISI (Chairperson), Professor Achla Raina, Professor Rajni Palriwala, Professor Saikat Sinha, Professor Arvind Pandey, Dr. Subrata Lahiri, Professor Manoj Panda, Professor-in-Charge Social Sciences Division (Convener).
(vii) Statistical Quality Control and Operations Research Division

Director, ISI (Chairperson), Professor Ramanuj Majumdar, Professor Debasis Kundu, Mr. Vadiraj Kulkarni, Dr. Richard Lobo, Shri. S. Krishnan, Dr. Gautam Chatterjee, Head, SQC & OR Division (Convener).

(viii) Library, Documentation and Information Sciences Division

Director, ISI (Chairperson), Dr. M. Paul Pandian, Dr. G. Mahesh, Dr. P.R. Goswami, Professor Sachindra Nath Bhattacharya, Kishor Chandra Satpathy, Chief Librarian (Convener).
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<td>Amita Majumder</td>
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<td>Sounak Chakraborty</td>
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Acknowledgements

The Editorial Board gratefully acknowledges the assistance rendered by the staff of the CE (A & F)'s Office, Public Relations Unit, Publication & Printing Unit and Reprography & Photography Unit in the preparation of this Annual Report.
Prof. Stephen Mack Stigler visiting P C Mahalanobis Memorial Museum & Archives at ISI, Kolkata on 11 December 2017

Inauguration of Women’s Day Celebration and Photography Exhibition at ISI, Kolkata on 08 March 2018

Felicitation of Dr. Ramdas Chatterjee by Prof. Amita Pal, Dean of Studies, ISI on the occasion of “Oral Health - An Untold Story” on 26 March 2018

Prof. S. Bandyopadhyay, Director, ISI at “Anti-Ragging Awareness Programme” on 08 August 2017

Shri Ramachandra Guha, Indian Historian, visiting ISI, Kolkata on 07 February 2018

Celebration of “126th Birth Anniversary of Dr. B. R. Ambedkar” organized by ISI SC/ST/BC Employees Co-ordination Council on 12 October 2017
Prof. David Jonathan Gross, Nobel Laureate, at the 52nd ISI Convocation, Kolkata on 09 January 2018

52nd Annual Convocation at ISI, Kolkata on 09 January 2018

“Hindi Pakwara” organized by ISI, Kolkata on 14 September 2017

70th ISEC Convocation at ISI Kolkata on 30 May 2017

Prof. M. Vellasco delivering lecture on 2017 IEEE CIS Summer School on “Recent Advances in Computational Intelligence (RACI)” at ISI, Kolkata during 18-22 September 2017

Condolence in memory of Prof. J K Ghosh, former Director, ISI on 11 October 2017