

## Curriculum Vitae of Arup Bose

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### Contact information:

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Born April 01 1959, Kolkata, India. Citizen of India.

**Education:** Ph.D. (Stat.) 1987, M. Stat. 1980 and B. Stat. 1979 from Indian Statistical Institute.

### Professional Appointments

Head-Stat-Math Unit Kolkata, Indian Statistical Institute (ISI) India. Sept. 2002–July 2005.

Professor-Stat-Math Unit Kolkata, ISI India since June 1995.

Associate Professor-Stat-Math Unit Kolkata, ISI India Jan. '91–May '95.

Assistant Professor-Dept. of Stat., Purdue University USA Jan. 1987–Dec. 1990.

Distinguished Visiting Professor-Dept. of Econ., Univ. of Cincinnati USA Oct.2005–Dec. 2005.

Visiting Professor-Dept. of Math., Univ. of California San Diego USA March–June 2001;  
Dept. of Stat., Purdue Univ. USA Jan. 2000–May 2000.

Visiting Associate Professor-Dept. of Stat., Purdue Univ. USA Aug. 1995–May 1996;  
Dept. of Math., Indiana Univ.–Purdue Univ. at Indianapolis USA Aug. 1992–May 1993.

### Editorial Activities

Editorial Board Member–*Lecture Note Series of Ramanujan Mathematical Society* 2009–

Associate Editor–*Statistical Methodology* June 2010–; *Indian Journal of Pure and Applied Mathematics* 2009–; *IMS Collection* Institute of Mathematical Statistics USA Jan. 2008–;  
*Statistics and Probability Letters* Jan. 2008–.

Editor–*Sankhyā* Jan. 2002 – Dec. 2007.

Managing Editor–*Sankhyā A* Jan. 1997 – Dec. 2001.

Co-editor–*Sankhyā A* May 1993 – Dec. 2001.

Referee for *NSF (USA)*, *DST* and *CSIR* proposals and for leading statistics and probability journals.

Reviewer for *Mathematical Reviews* since 1985. Have reviewed more than hundred articles.

## Honours and Awards

- Invited Session Organizer at the forthcoming *World Congress in Probability and Statistics*, July 09–12, 2012, Istanbul.
- Distinguished Lecturer and Invited Session Organizer at the forthcoming *The 2nd Institute of Mathematical Statistics Asia Pacific Rim Meeting, Tokyo July 2011. Postponed to July 02–04, 2012.*
- Invited speaker at the *International Congress of Mathematicians 2010.*
- J. C. Bose Fellow, DST Govt. of India 2009–2013. Provides a generous grant and a monthly honorarium for five years. Renewable.
- Fellow of the National Academy of Sciences Allahabad 2009.
- Fellow of the Indian National Science Academy New Delhi 2007.
- Fellow of the Indian Academy of Sciences Bangalore 2006.
- S.S. Bhatnagar Award in the Mathematical Sciences, CSIR Govt. of India 2004. The most well-known yearly scientific honour for Indian scientists below 45 years. Award conferred by the Prime Minister of India. Cash award and a monthly honorarium till retirement.
- Young Researcher Award, International Indian Statistical Association USA 2004.
- National Award in Statistics, Ministry of Statistics & Programme Implementation, Govt. of India 2002–2003. Biennial award for outstanding contribution to the field of Statistics to Indians below 45 years. Conferred by the Minister. Cash award.
- Fellow of the Institute of Mathematical Statistics USA 2002.

## Current Research Interests:

**Economics:** Information economics. Moral hazard problems and incentives.

**Econometrics:** Resampling in time series; Asymptotics of autocovariance matrices; Spectral inference.

**Probability:** Spectral properties of large dimensional random matrices. Extreme values.

**Statistics:**  $M$  estimation. Resampling.

## Earlier Research work in:

Generalised confidence intervals; Generalised bootstrap in dependent models; Residual bootstrap in time series; Accuracy of bootstrap in i.i.d models.

Kernel density estimates;  $U$  statistics; Kaplan-Meier estimates;  $M_m$  estimates.

Second order properties of point and interval estimates; Bernoulli sequential plans.

Law of large numbers for  $U$  statistics and  $L$  statistics.

Selection problems in multinomials.

Record values.

Rate of convergence in CLT for martingales; Moderate deviation probabilities for martingales.

Statistical estimation in nonlinear parametric diffusion process.

## Publications

### A0. Books under preparation:

- *U*-Statistics,  $M_m$ -Estimates and Resampling (with Snigdhanu Chatterjee).
- Patterned Random Matrices.

### A1. Articles under preparation:

- Some asymptotics for the sample autocovariance matrix (with Radhendushka Srivastava).
- Bounding the welfare loss from asymmetric information (with Debashis Pal and David Sappington).
- Richness orderings (with Satya R. Chakravarty and Conchita D'Ambrosio).
- Resampling in time series models (with Abhishek Bhattacharya).
- Limiting spectral distribution of nonsymmetric, random and nonrandom finite diagonal matrices (with Sreela Gangopadhyay and Koushik Saha).
- Random patterned block matrices with symmetric block structure (with Riddhipratim Basu, Shirshendu Ganguly and Rajat Subhra Hazra).
- Limiting spectral distribution of a class of patterned matrices (with Anirban Basak).
- An interview with K.R. Parthasarathy.

### A2. Articles unpublished: (Available at [www.isical.ac.in/~statmath](http://www.isical.ac.in/~statmath))

1. Banerjee, Sayan; Bose, Arup and Sen, Sanchayan (2011). Heteroscedastic Wigner matrices. Tech. Rep. R13/2011, October 2011 (11 pages). **Being submitted for publication.**
2. Basak, Anirban; Bose, Arup and Sen, Sanchayan (2011). Limiting spectral distribution of sample autocovariance matrices. Tech. Rep. R11/2011, August 2011 (41 pages). **Submitted for publication.**
3. Basu, Riddhipratim; Bose, Arup; Ganguly, Shirshendu and Hazra, Rajat Subhra (2011c). Limiting Spectral Distribution of Block Matrices with Toeplitz Block Structure. Tech. Rep. R14/2011, November 2011 (12 pages). **Being submitted for publication.**
4. Basu, Riddhipratim; Bose, Arup; Ganguly, Shirshendu and Hazra, Rajat Subhra (2011b). Spectral properties of random triangular matrices. Tech. Rep. R12/2011, October 2011 (20 pages). **Submitted for publication.**
5. Basu, Riddhipratim; Bose, Arup; Ganguly, Shirshendu and Hazra, Rajat Subhra (2011a). Joint convergence of several copies of different patterned random matrices. Tech. Rep. R10/2011, August 2011 (25 pages). **Submitted for publication.**

6. Bose, Arup; Pal, Debashis and Sappington, David (2011b). The impact of public ownership in the lending sector. Tech. Rep. R09/2011, June 2011 (42 pages). **Submitted for publication.**
7. <sup>1</sup>Bose, Arup; Pal, Debashis and Sappington, David (2011a). Extreme screening policies. Tech. Rep. R03/2011, February 2011 (38 pages). **Under revision.**
8. Bose, Arup and Gangopadhyay, Sreela (2010). Pfeifer records process. Tech. Rep. R12/2010, November 2010 (12 pages, revised to 14 pages). **Submitted for publication.**
9. Bose, Arup and Gupta, Barnali (2010). Welfare analysis of privatization in a bilateral monopoly. Tech. Rep. R6/2010, September 2010 (13 pages). Revised August 2011 with new title: Mixed markets in a bilateral monopoly, August 2011 (26 pages). **Under revision.**
10. Bose, Arup; Pal, Debashis and Sappington, David (2010). All productivity increases are not created equal. Tech. Rep. R16/2010, December 2010 (34 pages). **Submitted for publication.**
11. Bose, Arup and Dutta, Santanu (2009b). Estimating bias and mean squared error of kernel density estimator. Tech. Rep. R13/2009, July 2009 (21 pages) **Under revision.**
12. Bose, Arup and Dutta, Santanu (2009a). Smooth bootstrap estimate of mean integrated squared error. Tech. Rep. R1/2009, January 2009 (24 pages). **Under revision.**

A3. *Articles Published/Accepted:* (older versions at [www.isical.ac.in/~statmath](http://www.isical.ac.in/~statmath))

13. Banerjee, Sayan and Bose, Arup (2011). Noncrossing partitions, Catalan words and the semicircle law. **Journal of Theoretical Probability**. Online First May 20, 2011. DOI: 10.1007/s10959-011-0365-4. To appear in print.
14. Basak, Anirban and Bose, Arup (2011). Limiting spectral distribution of some band matrices. **Periodica Mathematica Hungarica**, 43, 1, 113–150. DOI: 10.1007/s10998-011-7113-5.
15. <sup>2</sup>Bose, Arup (2011). The ET interview: B.L.S. Prakasa Rao. **Econometric Theory**, 27, 2, 373–411. Published online September 27, 2011. DOI:10.1017/S0266466610000319
16. <sup>3</sup>Bose, Arup and Dey, Aloke (2011). The wonderful world of eigenvalues. Invited article in **Math Unlimited: Essays in Mathematics**. Editors: R. Sujatha, H.N. Ramaswamy and C.S. Yogananda. CRC Press.
17. Bose, Arup and Gangopadhyay, Sreela (2011). Asymptotic properties of near Pfeifer records. **Extremes**, 14, 253–265. DOI: 10.1007/s10687-010-0108-4.

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<sup>1</sup>Presented at the prestigious *Fourth Annual Conference on Entrepreneurship and Innovation*. Northwestern University, Illinois, June 16–17, 2011.

<sup>2</sup>Interview

<sup>3</sup>Not refereed

18. Bose, Arup; Guha, Suman; Hazra, Rajat Subhra and Saha, Koushik (2011). Circulant type matrices with heavy tailed entries. **Statistics and Probability Letters**, 81, 1706–1716.
19. Bose, Arup and Gupta, Barnali (2011). Optimal training, employee preferences and moral hazard. **The Journal of Economic Theory and Social Policy**. Nova Science Publishers, New York. To appear.
20. Bose, Arup; Hazra, Rajat Subhra and Saha, Koushik (2011e). Extremum of Circulant type matrices: a survey. **Journal of Indian Statistical Association**. To appear.
21. Bose, Arup; Hazra, Rajat Subhra and Saha, Koushik (2011d). Poisson convergence of eigenvalues of circulant type matrices. **Extremes**. Volume 14, Number 4, 365–392, DOI: 10.1007/s10687-010-0115-5
22. Bose, Arup; Hazra, Rajat Subhra and Saha, Koushik (2011c). Half independence and half cumulants. **Electronic Communications in Probability**, 16, paper No. 37, 405–422.
23. Bose, Arup; Hazra, Rajat Subhra and Saha, Koushik (2011b). Convergence of joint moments for independent random patterned matrices. **Annals of Probability**, 39, 4, 1607–1620. DOI: 10.1214/10-AOP597
24. Bose Arup; Hazra, Rajat Subhra and Saha, Koushik (2011a). Spectral norm of circulant type matrices. **Journal of Theoretical Probability**, 24, 2, 479–516.
25. Bose, Arup; Pal, Debashis and Sappington, David (2011). On the performance of linear contracts. **Journal of Economics & Management Strategy**, 20, 1, 159–193.
26. Bose, Arup; Pal, Debashis and Sappington, David (2011). Pareto-improving inefficiency. **Oxford Economics Papers**, 63, 1, 94–110.
27. Bose, Arup and Sen, Sanchayan (2011). Finite diagonal random matrices. **Journal of Theoretical Probability**. Online first, September 10, 2011. DOI: 10.1007/s10959-011-0378-z. To appear in print.
28. Bandyopadhyay, Subhadip; Bose, Arup and Sengupta, Debasis (2010). Nonparametric estimation of multivariate density with direct and auxiliary data and application. **Special Platinum Jubilee Issue of Indian Journal of Pure and Applied Mathematics**, 40, 1, 248–274.
29. Basak, Anirban and Bose, Arup (2010). Balanced random Toeplitz and Hankel matrices. **Electronic Communications in Probability**, 15, 134–148.
30. Bose, Arup and Gangopadhyay, Sreela (2010). Convergence of linear functions of Pfeifer Records. **Extremes**, 13, 89–106.
31. Bose, Arup; Gangopadhyay, Sreela and Sen, Arnab (2010). Limiting spectral distribution of  $XX'$  matrices. **Annales de l'Institut Henri Poincaré— Probabilités et Statistiques**, 46, 3, 677–707.

32. Bose, Arup; Hazra, Rajat Subhra and Saha, Koushik (2010c). Product of exponentials and spectral radius of random  $k$  circulants. **Annales de l'Institut Henri Poincaré—Probabilités et Statistiques**. To appear.
33. <sup>4</sup>Bose, Arup; Hazra, Rajat Subhra and Saha, Koushik (2010b). Patterned random matrices and method of moments. **Proceedings of the International Congress of Mathematicians** Hyderabad, India, 2010, 2203–2230. (Invited article). World Scientific, Singapore and Imperial College Press, UK.
34. Bose, Arup; Hazra, Rajat Subhra and Saha, Koushik (2010a). Spectral norm of circulant type matrices with heavy tailed entries. **Electronic Communications in Probability**, 15, 299–313.
35. Bose, Arup; Mitra, Joydip and Sen, Arnab (2010). Limiting spectral distribution of random  $k$  circulants. **Journal of Theoretical Probability**. Online first Sept 24, 2010. DOI: 10.1007/s10959-010-0312-9. To appear in print.
36. Bose, Arup; Pal, Debashis and Sappington, David (2010c). Asymmetric treatment of identical agents in teams. **European Economic Review**, 54, 947–961.
37. Bose, Arup; Pal, Debashis and Sappington, David (2010b). Equal pay for unequal work: limiting sabotage in teams. **Journal of Economics & Management Strategy**. 19, 1, 25–53.
38. Bose, Arup; Pal, Debashis and Sappington, David (2010a). On the design of piece-rate contracts. **Economics Letters**, 107, 330–332.
39. Bose, Arup (2009).  $L_1$  regression estimate and its bootstrap. **Science in China Series A: Mathematics** Special issue in honour of Z.D. Bai, 52, 6, 1251–1261.
40. Bose, Arup; Dasgupta, Amites and Maulik, Krishanu (2009b). Multicolor urn models with reducible replacement matrices. **Bernoulli**, 51, 1, 279–295.
41. Bose, Arup; Dasgupta, Amites and Maulik, Krishanu (2009a). Strong laws for balanced triangular urns. **Journal of Applied Probability**, 46, 2, 571–584.
42. Bose Arup; Hazra, Rajat Subhra and Saha, Koushik (2009). Limiting spectral distribution of circulant type matrices with dependent inputs. **Electronic Journal of Probability**. Vol. 14, Paper no. 86, pages 2463–2491.
43. Bose, Arup and Mukherjee, Kanchan (2009). Bootstrapping a weighted linear estimator of the ARCH parameters. **Journal of Time Series Analysis**, 30, 3, 315–331.
44. Roy, Anindya and Bose, Arup (2009). Coverage of generalized confidence intervals. **Journal of Multivariate Analysis**, 100, 7, 1384–1397.
45. Bose, Arup; Dasgupta, Amites and Maulik, Krishanu (2008). Maxima of Dirichlet and triangular arrays of gamma variables. **Statistics and Probability Letters**, 78, 16, 2811–2820.

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<sup>4</sup>Conference Proceedings

46. Bose, Arup and Sen, Arnab (2008). Another look at the moment method for large dimensional random matrices. **Electronic Journal of Probability**, 13, 588–628.
47. Bose, Arup; Dasgupta, Amites and Maulik, Krishanu (2007). Maxima of the cells of an equiprobable multinomial. **Electronic Communications in Probability**, 12, 93–105.
48. Bose, Arup; Gangopadhyay, Sreela and Goswami, Alok (2007). A note on random coin tossing. **Indagationes Mathematicae**, 18, 3, 405–416.
49. Bose, Arup and Sen, Arnab (2007b). On asymptotic properties of the rank of a special random adjacency matrix. **Electronic Communications in Probability**, 12, 200–205.
50. Bose, Arup and Sen, Arnab (2007a). Spectral norm of random large dimensional non-central Toeplitz and Hankel matrices. **Electronic Communications in Probability**, 12, 21–27.
51. Bose, Arup; Gangopadhyay, Sreela; Maulik, Krishanu and Sarkar, Anish (2006). Convergence of tail sum for records. **Extremes**, 9, 151–168.
52. Bose, Arup; Gangopadhyay, Sreela and Sarkar, Anish (2005). Partial sum process for records. **Extremes** 8, 43–56.
53. Chatterjee, Snigdhanu and Bose, Arup (2005). Generalised bootstrap for estimating equations. **Annals of Statistics**, 33, 1, 414–436.
54. <sup>5</sup>Basu, Srabashi and Bose, Arup (2004). A gentle introduction to resampling plans. Invited article in **Statistical Computing: Existing Methods and Recent Developments** (Ed. D. Kundu and A. Basu). IIT Kanpur Series of Advanced texts, 253–288. Published by Narosa.
55. Chatterjee, Sourav and Bose, Arup (2004). A new method for bounding rates of convergence of empirical spectral distributions. **Journal of Theoretical Probability** 17, 4, 1003–1019.
56. Bose, Arup and Chatterjee, Snigdhanu (2003). Generalised bootstrap for estimators of minimisers of convex functionals. **Journal of Statistical Planning and Inference**, 11, 225–239.
57. Bose, Arup; Chatterjee, Sourav and Gangopadhyay, Sreela (2003). Limiting spectral distribution of large dimensional random matrices. Invited article. Special Volume of **Journal of Indian Statistical Association** in honour of S.R. Adke. 41,2, 221–259.
58. Bose, Arup; Gangopadhyay, Sreela; Sarkar, Anish and Sengupta, Arindam (2003a). Asymptotic properties of sums of upper records. **Extremes**. 6, 2, 147–164.

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<sup>5</sup>Book Chapter

59. Bose, Arup; Gangopadhyay, Sreela; Sarkar, Anish and Sengupta, Arindam (2003b). Convergence of lower records and infinite divisibility. **Journal of Applied Probability**, 40, 4, 1–16.
60. Bose, Arup and Mukherjee, Kanchan (2003). Estimation of the ARCH parameters by solving linear equations. **Journal of Time Series Analysis** 24, 2, 127–136.
61. Bose, Arup; Sarkar, Anish and Sengupta Arindam (2003). Infinite product of records. **Journal of Applied Statistical Sciences**, 12, No. 1, 1–10.
62. Bose, Arup and Sengupta, Debapriya (2003). Strong consistency of minimum contrast estimators. **Sankhyā**, 65, 2, 440–463.
63. <sup>6</sup>Bose, Arup (2002).  $U$  statistics and  $M_m$  estimates. Invited article in **Uncertainty and Optimality-Probability, Statistics and Operations Research**. (ed. J. C. Misra), 257–292. World Scientific Publishing, River Edge, New Jersey.
64. Bose, Arup and Chatterjee, Snigdhanu (2002). Comparison of bootstrap and jackknife variance estimators in linear regression: second order results. **Statistica Sinica**, 12, 2, 575–598.
65. <sup>7</sup>Bose, Arup; DasGupta, Anirban and Rubin, Herman (2002). A contemporary review and bibliography of infinite divisible distributions. **Sankhyā**, 64, Part 3, 763–819. Special Issue in memory of D. Basu.
66. Bose, Arup and Mitra, Joydip (2002). Limiting spectral distribution of a special circulant. **Statistics and Probability Letters**, 60, 1, 111–120.
67. Bose, Arup and Sen, Arusharka (2002). Asymptotic distribution of the Kaplan-Meier  $U$ -statistics. **Journal of Multivariate Analysis**, 83, 1, 84–123.
68. Chatterjee, Snigdhanu and Bose, Arup (2002). Dimension asymptotics for generalised bootstrap in linear regressions. **Annals of the Institute for Statistical Mathematics**, 54, 2, 367–381.
69. Bishwal, J. P. N. and Bose, Arup (2001). Rates of convergence of approximate maximum likelihood estimators in the Ornstein-Uhlenbeck process. **Computers and Mathematics with applications**, 42, 23–38.
70. Bose, Arup (2001). A boundary crossing problem with application to sequential estimation. **Sequential Analysis**, 20, 1, 65–76.
71. Bose, Arup and Snigdhanu Chatterjee (2001a). Generalised bootstrap in non-regular  $M$ -estimation problems. **Statistics and Probability Letters**, 55, 3, 319–328.
72. Bose, Arup and Chatterjee, Snigdhanu (2001b). Last passage times of minimum contrast estimators. **Journal of Australian Mathematical Society**, 71, 1, 1–10. Published online April 9, 2009. DOI:10.1017/S1446788700002676.

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<sup>6</sup>Book Chapter

<sup>7</sup>Review article

73. Chatterjee, Snigdhanu and Bose, Arup (2000). Variance estimation in high dimensional regression models. **Statistica Sinica**, 10, No 2, 497–515.
74. Bose, Arup and Sen, Arusharka (1999). The strong law of large numbers for Kaplan-Meier  $U$  statistics. **Journal of Theoretical Probability** 12, 1, 181–200.
75. Bose, Arup (1998a). Bahadur representation of  $M_m$  estimates. **Annals of Statistics** 26, 2, 771–777.
76. Bose, Arup (1998b). A Glivenko-Cantelli theorem and strong laws for  $L$  statistics. **Journal of Theoretical Probability** 11, 4, 921–933.
77. <sup>8</sup>Bose, Arup and Nagaraj, N. K. (1998). Estimation of autoregressive parameters with systematic but incomplete sampling. **Frontiers in Probability and Statistics** (ed. S. P. Mukherjee, S. K. Basu and B. K. Sinha), 41–51. Narosa, London.
78. Bose, Arup (1997). A note on the Marcinkiewicz-Zygmund strong law of large numbers. **Calcutta Statistical Association Bulletin** 47, Nos 187-188, 233–238.
79. Bose, Arup and Boukai, Benzion (1997). Sequential estimation of the mean of the NEF-PVF distribution. **Journal of Statistical Planning and Inference** 63, 1, 55–70.
80. Bose, Arup and Boukai, Benzion (1996). Estimation with prescribed proportional accuracy for a two-parameter exponential family of distributions. **Annals of Statistics** 24, 4, 1792–1803.
81. <sup>9</sup>Bose, Arup and Politis, Dimitris (1996). A review of the bootstrap for dependent samples. Invited article in **Stochastic Processes and Statistical Inference**, (Ed. B. R. Bhat and B. L. S. Prakasa Rao), 39–83, New Age International Limited, New Delhi.
82. Bishwal, J. P. N. and Bose, Arup (1995). Speed of convergence of the maximum likelihood estimate in the Ornstein-Uhlenbeck process. **Calcutta Statistical Association Bulletin** 45, Nos. 179-180, 245–251.
83. Bose, Arup (1995). Estimating the asymptotic dispersion of the  $L_1$  median. **Annals of the Institute of Statistical Mathematics** 47, 2, 267–271.
84. Bose, Arup and Boukai, Benzion (1995). Bias corrected sequential estimation for the mean of NEF-PVF distribution. **Sequential Analysis** 14, 4, 307–320.
85. Bose, Arup and Mukhopadhyay, Nitis (1995a). Sequential interval estimation via replicated piecewise stopping times and accelerated stopping times in a class of two parameter exponential distributions. **Sequential Analysis** 14, 4, 287–306.
86. Bose, Arup and Mukhopadhyay, Nitis (1995b). A note on accelerated sequential estimation of the mean of NEF-PVF distributions. **Annals of the Institute of Statistical Mathematics** 47, 1, 99–104.

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<sup>8</sup>Conference Proceedings

<sup>9</sup>Book Chapter

87. Bose, Arup and Mukhopadhyay, Nitis (1995c). Sequential estimation of the mean of an exponential distribution via replicated piecewise stopping number. **Statistics and Decisions** 13, 351–361.
88. Bose, Arup and Chandra, T. K. (1994). A note on the strong law of large numbers. **Calcutta Statistical Association Bulletin** 44, No. 173–174, 115–122.
89. Bose, Arup and Dasgupta, Ratan (1994a). On some asymptotic properties of  $U$  statistics and one sided estimates. **Annals of Probability** 22, 4, 1715–1724.
90. Bose, Arup and Dasgupta, R. (1994b). Speed of convergence of the least squares estimator in autoregressive models. **Journal of Statistical Planning and Inference** 38, 3, 371–380.
91. Bose, Arup and Mukhopadhyay, Nitis (1994a). Sequential estimation via replicated piecewise stopping number in a two-parameter exponential family of distributions. **Sequential Analysis** 13, 1, 1–10.
92. Bose, Arup and Mukhopadhyay, Nitis (1994b). Sequential estimation by accelerated stopping time in a two-parameter exponential family of distributions. **Statistics and Decisions** 12, 281–291 (1994).
93. Bose, Arup and Boukai, Benzion (1993). Sequential estimation results for a two-parameter exponential family of distributions. **Annals of Statistics** 21, 1, 484–502.
94. Bose, Arup and Chandra, T. K. (1993). Cesaro uniform integrability and  $L_p$ -convergence. **Sankhyā**, 55, A, 12–28.
95. Bose, Arup and Chaudhuri, P. (1993). On the dispersion of multivariate median. **Annals of the Institute of Statistical Mathematics** 45, 3, 541–550.
96. <sup>10</sup>Basu, A.; Bose Arup and Ghosh, J. K. (1991). Sequential design and allocation rules. Invited article in **Handbook of sequential analysis** (Ed. B. K. Ghosh and P. K. Sen), 475–501. Marcel-Dekker.
97. Bose, Arup and Babu, G. J. (1991). Accuracy of the bootstrap approximation. **Probability Theory and Related Fields** 90, 301–316.
98. Bhandari, S. K. and Bose, Arup and (1990). Existence of unbiased estimates in sequential binomial experiments. **Sankhyā** 52, A, 1, 127–130. Corrigenda **Sankhyā** A, 55, 2, 327 (1993).
99. Bose, Arup (1990). Bootstrap in moving average models. **Annals of the Institute of Statistical Mathematics** 42, 4, 753–768.
100. Babu, G. J. and Bose, Arup (1989). Bootstrap confidence intervals. **Statistics and Probability Letters** 7, 151–160.

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<sup>10</sup>Book Chapter

101. Bhandari, S. K. and Bose, Arup (1989). Selecting the t-best cells in a multinomial distribution. **Communications in Statistics, Theory Methods** 18, 9, 3313–3326.
102. Bose, Arup (1988a). Higher order approximations for auto-covariances from linear processes with applications. **Statistics** 9, 2, 259–269.
103. Bose, Arup (1988b). Edgeworth correction by bootstrap in autoregressions. **Annals of Statistics** 16, 4, 1709–1722.
104. <sup>11</sup>Bose, Arup (1988c). Bootstrap in time series models. **Proceedings of the Winter Simulation Conference** Ed. M. Abrams, P. Haigh and J. Comfort. Institute of Electric and Electronic Engineers, San Francisco, California, 486–490.
105. Dasgupta, Anirban and Bose, Arup (1988).  $\Gamma$ -minimax and restricted-risk Bayes estimation of multiple Poisson means under  $\epsilon$  contaminations of the subjective prior. **Statistics and Decisions** 6, 311–341.
106. Sriram, T. N. and Bose, Arup (1988). Sequential shrinkage estimation in the general linear model. **Sequential Analysis** 7, 2, 149–164.
107. Bhandari, S. K. and Bose, Arup (1987). On selecting the most likely event. **Journal of Statistical Planning and Inference** 17, 227–240.
108. Bose, Arup (1987). Some remarks on the paper “Sums of independent squared Cauchy variables grow quadratically: Applications” by F. Eicker. **Sankhyā** 49, A, 1, 138–140.
109. Bose, Arup (1986a). Berry-Esseen bound for the maximum likelihood estimator in Ornstein-Uhlenbeck process. **Sankhyā** 48, A, 181–187.
110. Bose, Arup (1986b). Certain non-uniform rates of convergence to normality for a restricted class of martingales. **Stochastics** 16, 279–294.
111. Bose, Arup (1986c). Certain non-uniform rates of convergence to normality for martingale differences. **Journal of Statistical Planning and Inference** 14, 155–167.
112. Sinha, Bikas K and Bose, Arup (1985). Unbiased sequential estimation of  $1/p$ : settlement of a conjecture. **Annals of the Institute of Statistical Mathematics** 37, A, 455–460.
113. Bose, Arup and Sinha, Bikas K. (1984). Sequential Bernoulli sampling plans re-examined. **Calcutta Statistical Association Bulletin** 33, 109–120.
114. Bose, Arup (1983a). The Bernstein von Mises Theorem for a certain class of diffusion processes. **Sankhyā** 45, A, 2, 150–160.
115. Bose, Arup (1983b). Asymptotic theory of estimation in non-linear stochastic differential equations for the multiparameter case. **Sankhyā** 45, A, 1, 56–65.

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<sup>11</sup>Conference Proceedings

## B. Book Reviews:

1. Bose, Arup (2006b). *Statistical Analysis and Data Display* by Richard M. Heiberger and Burt Holland. **Sankhyā** 68, 3, 510.
2. Bose, Arup (2006a). *An R and S-Plus Companion to Multivariate Analysis* by Brian Everitt. **Sankhyā** 68, 1, 176.
3. Bose, Arup (2005c). *Statistical Inference for Ergodic Diffusion Processes* by Yuri A. Kutoyants. **Sankhyā** 67, 1, 137–139.
4. Bose, Arup (2005b). *Permutation, Parametric and Bootstrap Tests of Hypothesis*, by Philip Good. **Sankhyā** 67, 1, 140–141.
5. Bose, Arup (2005a). *Statistics and Finance* by David Ruppert. **Sankhyā** 67, 1, 148–149.
6. Bose, Arup (2004b). *Multivariate  $t$  distribution and their application* by S. Kotz and S. Nadarajah. **Sankhyā**, 66, 3, 590–591.
7. Bose, Arup (2004a). *All of Statistics: A concise course in statistical inference* by L. Wassermann. **Sankhyā**, 66, 3, 588–589.
8. Bose, Arup (2003e). *Mathematical Statistics* by Jun Shao. **Sankhyā**, 65, 3, 714.
9. Bose, Arup (2003d). *Statistical Data Analysis Based on the  $L_1$ -norm and Related Methods. Statistics for Industry and Technology* by Yadolah Dodge (Editor). **Sankhyā**, 65, 3, 712–713.
10. Bose, Arup (2003c). *A distribution free theory of nonparametric regression* by Lázlyo Györfi, Michael Kohler, Adam Krzyjak and Harro Walk. **Sankhyā**, 65, 2, 490–492.
11. Bose, Arup (2003b). *Lévy Processes. Theory and Applications* by Ole E. Barndorff-Nielsen, Thomas Mikosch and Sidney I. Resnick. **Sankhyā**, 65, 2, 488–489.
12. Bose, Arup (2003a). *Selfsimilar Processes* by Paul Embrechts and Makato Maeijima. **Sankhyā**, 65, 2, 485–487.
13. Bose, Arup (2002b). *The Basics of S-Plus* (Third Edition) by Andreas Kraus and Melvin Olson. **Sankhyā**, Ser. B, 64, 3, 357.
14. Bose, Arup (2002a). *Probability for statisticians* by Galen R. Shorack. **Sankhyā** Ser. A, 64, 1, 180–181.
15. Bose, Arup (2001). *Subsampling* by D. Politis, J.P. Romano and M. Wolf. **Mathematical Reviews**, 20001d:62047.
16. Bose, Arup and Rao, B. V. (2000). *Decoupling* by Victor de la Pena and E. Gine. **Sankhyā** A, Vol 62, 2, 282–283.
17. Bose, Arup (2000). *Mathematical Statistics* by George R. Terrell. **Sankhyā** A, 62, 1, 154–156.
18. Bose, Arup (1999b). *Elements of Large Sample Theory* by E.L.Lehmann. **Sankhyā** A, Vol. 61, Part 3, 453–455.
19. Bose, Arup (1999a). *Theory of Point Estimation* by E.L.Lehmann and G. Casella. In **Sankhyā** A, 61, 1, 152.
20. Bose, Arup (1997d). *Visual Explanations*, by E. Tufte. **Sankhyā** A, 3, 453.

21. Bose, Arup (1997c). *Astrostatistics*, by G. J. Babu and F. D. Fiegelson. **Sankhyā A**, 3, 452.
22. Bose, Arup (1997b). *Analyzing and modeling rank data*, by John I. Marden. **Sankhyā A**, 3, 451.
23. Bose, Arup (1997a). *Introduction to Statistical Time Series* by Wayne Fuller. **Indian Society for Medical Statistics Bulletin**, 12, 1, 2–3.
24. Bose, Arup (1996). *Measure Theory and Probability* by V. Guillemin. **Sankhyā**, Ser. A, 58, 2, 343.
25. Bose, Arup (1995). *Computer intensive statistical methods*, by J.S.Urban Hjorth **Mathematical Reviews**, 95g:62093.
26. Bose, Arup (1993c). *Time Series: Theory and Methods*, Second Edition, by Brockwell and Davis. **Sankhyā A**, 55, 2, 326.
27. Bose, Arup (1993b). *Envisioning Information*, by E. Tufte. **Sankhyā A**, 55, 2, 325.
28. Bose, Arup (1993a). *Linear Models* by R. Christensen. **Sankhyā A**, 55, 2, 325.

**Acted as Referee for the following journals (in alphabetic order):** Annals of Probability, Annals of Statistics, Annals of Applied Probability, Annals of Institute of Statistical Mathematics, Bernoulli, Calcutta Statistical Association Bulletin, Communications in Statistics, Theory Methods, Computational Statistics and Data Analysis, Economics Bulletin, Journal of Business and Economic Statistics, Journal of Economics Management & Strategy, Journal of Indian Statistical Association, Journal of Multivariate Analysis, Journal of Nonparametric Statistics, Journal of Statistical Planning and Inference, Journal of Time Series Analysis, Latin American Journal of Probability and Mathematical Statistics ALEA, Metron, Sankhyā Series A, Sankhyā Series B, Sequential Analysis, Statistica Sinica, Statistics, Stochastic Processes and its Applications, Stochastics and Stochastic Reports.

#### **PhD Thesis supervision:**

- *Koushik Saha* on *Spectral properties of large dimensional random circulant type matrices*, Indian Statistical Institute, 2011. Currently Lecturer, Bidhannagar Govt. College, Kolkata, India.
- *Santanu Dutta* on *Smooth bootstrap estimate of some local and global measures of accuracy of kernel density estimators*, Tezpur University, 2011. Co supervisor. Currently Associate Professor, Tezpur University, Assam, India.
- *Snigdhasu Chatterjee* on *Generalised Bootstrap Techniques*, Indian Statistical Institute, 2000. Currently Associate Professor at University of Minnesota, USA.
- *J.P.N. Bishwal* on *Asymptotic theory of estimation of the drift parameter in diffusion processes*, Sambalpur University, 2000. Currently, Associate Professor at University of North Carolina, Charlotte, USA.

### **Student project supervision:**

#### **Two semester project supervision (each project counts as two full courses):**

- *Riddhipratim Basu*, Large Dimensional Random Matrices, M.Stat. project at Indian Statistical Institute, July 2010–May 2011. Currently Graduate Student at University of California, Berkeley, USA.
- *Shirshendu Gangopadhyay*, Large Dimensional Random Matrices, M.Stat. project at Indian Statistical Institute, July 2010–May 2011. Currently Graduate Student at University of Washington, Seattle, USA.
- *Sayan Banerjee*, Large Dimensional Random Matrices, M.Stat. project at Indian Statistical Institute, July 2009–July 2010. Currently Graduate Student at University of Washington, Seattle, USA.
- *Sanchayan Sen*, Limiting Spectral Distribution of Random Matrices, M.Stat. project at Indian Statistical Institute, July 2009–July 2010. Currently Graduate Student at Courant Institute, New York, USA.
- *Anirban Basak*, Large Dimensional Random Matrices, M.Stat. project at Indian Statistical Institute, July 2008–June 2009. Currently Graduate Student at Stanford University, USA.
- *Arnab Sen*, Large Dimensional Random Matrices, M.Stat. project at Indian Statistical Institute, July 2005–June 2006. Currently Postdoctoral Fellow at Cambridge University, UK.

#### **One semester project supervision (each project counts as one full course):**

- *Tamal Ghosh*, GARCH Model and bootstrapping. M.Stat. project at Indian Statistical Institute, January–May 2009.
- *Abhishek Bhattacharya*, Resampling in time series models, M.Stat. project at Indian Statistical Institute, 2004. Currently, Assistant Professor, Indian Statistical Institute, Kolkata.
- *Sourav Chatterjee*, Random Matrices, M.Stat. project at Indian Statistical Institute, 2002. Currently Associate Professor at Courant Institute, New York, USA.
- *Soumik Pal*, ARCH Models, M.Stat. project at Indian Statistical Institute, 2002. Currently Assistant Professor at University of Washington, Seattle, USA.
- *Snigdhasu Chatterjee*, Last Passage Time of  $M$  Estimates, M.Stat. project at Indian Statistical Institute, 1995. Currently Associate Professor at University of Minnesota, USA.

#### **Summer project supervision:**

*Sougata Choudhuri*, Classification and variable selection in regression modelling, two month Masters Summer Project supported by Jawaharlal Nehru Center for Advanced Scientific Research, done at Indian Statistical Institute, 2008.

**Classroom Teaching** (Partial list based on incomplete information).

**October 2007–December 2011, Indian Statistical Institute, Kolkata:**

- *Introduction to Random Matrices*. Research course. September 2011–October 2011.
- *Spectral density and periodogram of univariate time series*. Research course, July 2011–September 2011.
- *Asymptotic Theory* ( $U$  statistics,  $M$  estimates and efficiency of estimators). Research course, January 2011–May 2011.
- *Time Series*. Research course, July 2010–December 2010.
- *Asymptotic Theory* ( $U$  statistics,  $M$  estimates and resampling). Research course, January 2010–May 2010.
- *Patterned Random Matrices and Free Probability*. Research course (and also for two M. Stat. Project students), January 2010–April 2010.
- *Measure Theory and Probability*. M. Stat. First Year, July 2008–December, 2008.
- *Limiting Spectral Distribution of Large Dimensional Random Matrices*. Seminar course for Research Scholars, October 2007–December 2007.

**October 2007, Reserve Bank of India, Mumbai:**

- *Resampling and Nonparametrics*, a course of twelve sessions to RBI Officers and trainees, October 2007.

**July 2007, Indian Institute of Astrophysics–Pennsylvania State University Astrostatistics School at Kavalur:**

- *Estimation and Testing*. A few Lectures, July 2007.

**July 2002–September 2007, Indian Statistical Institute, Kolkata:**

- *Infinitely Divisible Laws*. Research course, July 2007–September 2007.
- *Probability Theory and Stochastic Processes*. M. Math. Second year, January 2007–May 2007.
- *Measure Theoretic Probability*. M. Math. First year, July 2006–December 2006.
- *Nonparametric Inference*. M. Stat. Final Year, January 2006–May 2006.
- *Statistical Computing* (jointly with Arnab Chakraborty) M. Stat. July 2005–December, 2005.
- *Time Series Methods*. M. Stat. First Year, January 2005–May 2005.
- *Asymptotic Theory of Inference*. M. Stat. Final Year, January 2004–May 2004.
- *Nonparametric Statistics*. M. Stat. Final Year, July 2003–December 2003.
- *Time Series Methods*. M. Stat. Final Year, January 2003–May 2003.
- *Large Sample Statistical Methods*. M. Stat. First Year, July 2002–December 2002.

**April 2001–June 2001, Univ. of California at San Diego, USA:**

- *Statistical Methods* (undergraduate) April 2001–June 2001.

**June 2000–March 2001, Indian Statistical Institute, Kolkata:**

- *Asymptotic Theory of Inference*. M. Stat. Final year, July 2001–Dec 2001.
- *U Statistics and M Estimates*. UGC Refresher course, February 2001–March 2001.
- *Time Series*. M. Stat. Final Year and M. Stat. First Year, January 2001–May 2001.
- *Nonparametric Statistics*. M. Stat. Final year, August 2000–Dec 2000.

**January 2000–May 2000, Purdue University, USA:**

- *Statistics for Life Sciences*. Two sections, January 2000–May 2000.

**June 1996–December 1999, Indian Statistical Institute, Kolkata:**

- *Decoupling*. Seminar course for Faculty and Research Scholars. 1999.
- *Nonparametric Statistics*. M. Stat. Final year, August 1999–Dec 1999.
- *Inference II*. B. Stat. Third year, January 1999–May 1999.
- *Time Series* (jointly with S. Chatterjee). UGC Refresher Course, February, 1999.
- *Inference I*. B. Stat. Third year, August 1998–Dec 1998.
- *Statistical Decision Theory*. M. Stat. Final year, August 1997–Dec 1997.
- UGC refresher course, December 1996.

**August 1995–May 1996, Purdue University, USA: Four full courses including**

- *Probability* (undergraduate)
- *Statistical Methods* (undergraduate).

**June 1993–July 1995, Indian Statistical Institute, Kolkata:**

- *Time Series*. M. Stat. First Year, January 1995–May 1995.
- *U Statistics*. SERC School, October 1994–November 1994.
- *Time Series*. M. Stat. Final Year and M. Stat. First Year, January 1994–May 1994.
- *Bayesian Statistical Methods*: M. Stat. First Year, July 1993–December 1993.

**August 1992–May 1993, Indiana University Purdue University at Indianapolis, USA:**

- *Sample Surveys*. Masters level, January 1993–May 1993.
- *Probability*. Masters level, January 1993–May 1993.
- *Statistical Methods* (dual level), two sections, August 1992–December 1992.

**January 1991–July 1992, Indian Statistical Institute, Kolkata:**

- *Summer School on Regression Techniques and Multivariate Statistical methods*. Organiser (jointly with S. DasGupta), June 4–June 16, 1992.
- *Time Series*. M. Stat. First Year and B. Stat. Third Year, January 1992–May 1992.
- *Bayesian Inference* (jointly with Debapriya Sengupta). M. Stat. Final Year and M. Stat. First Year, July 1991–Dec 1991.
- *Sequential Estimation*. M. Stat. Final Year, January 1991–May 1991.

**January 1987–December 1990, Purdue University, USA. Twenty courses in all, including**

- *Measure Theoretic Probability*. Masters level.
- *Probability*. Masters level.
- *Design of Experiments*. Masters level.
- *Statistical Inference*. Masters level.
- *Introduction to Probability*. Undergraduate level.
- *Statistical Methods*. Dual/undergraduate level.

**July 1982– December 1986, Indian Statistical Institute, Kolkata Taught as a Senior Research Scholar (Graduate student):**

- *Applied Stochastic Process*. M. Stat Final year. August 1986–December 1986.
- *Summer School on Analysis and Probability*, two lectures on conditional probability. For Lecturers and Research Scholars, May 1986–June, 1986. Tutorial.
- *Markov Processes and Stochastic Integrals*. Research course.
- *Asymptotic Theory* (part). M. Stat.
- *Nonparametric estimation* (part). M. Stat.

## **Committee Service**

### **Academic Committees, External:**

*Award Committees:* CSIR; NASI-SCOPUS; International Indian Statistical Association.

*Fellows Committee:* INSA.

*Nominating Committees:* Institute of Mathematical Statistics USA.

*Grant Committee:* FIST DST.

*Curriculum development and/or syllabus committees:* Central University Bihar; Central University Sikkim; Utkal University.

*Faculty promotion/selection committees:* IIT Mumbai; Central University Hyderabad; IISER Kolkata; IISER Mohali; Institute of Advanced Study in Science and Technology, Guwahati; Lucknow University; Visva Bharati, Shantiniketan.

*Examination Committees:* Confidential examination committees of Govt. organizations; Kalyani University moderation; CSIR Shyamaprasad Mukherjee Fellowship test committee, 2004, 2010.

### **Academic committees at Indian Statistical Institute, 1991–2010:**

#### **Entrance Exam committees:**

Junior Research Fellows (JRF) in Statistics, 2003, 1999, 1992, 1991.

JRF in Mathematics, 2010, 2008, 2007.

Master of Mathematics, 2008.

Bachelor of Statistics, 2006, 2002, 1997, 1996, 1993.

Master of Statistics, 2001, 1995, 1992.

Mathematics for Master of Statistics, Master of Technology in SQC and in Computer Science, 1995.

JRF in Theoretical Computer Science, 1992.

Master of Technology in Computer Science, 1991.

#### **Other academic committees:**

Department Research Fellow Advisory Committee: 2003–2010, 1998–2002, 1994–1996.

M. Math Syllabus Review Committee, 2008–2009.

Sankhyā committee, 2006.

PhD. DSc Committee 2004–2006.

Committee for recruitment in Statistics/SQC, 2004.

Mahalanobis Symposium Prize committee, 2002–2003.

Department Standing Search Committee 2000–2001.

Examinations Committee for professional examinations, 1996.

Dean's Research Associate Selection Committee 1994.

Introduction of Master's programme in Economics, Syllabus committee 1991.

M. Stat. Syllabus Review Committee.

### **Academic committees at Purdue University, USA. 1987–1990:**

Ph.D. Qualifying Examinations Committee 1988–1990.

Ph.D. Examinations Committee of three students in 1989–1990.

Masters Examination Committee of one student in 1989.

### **Nonacademic committees: at Indian Statistical Institute:**

Campus Network Committee Vice-Chairman, 2004–2005

Chief Librarian selection committee, 2004

Administrative workers review 2003, 2001, 1999

Committee on Revision of Scientific Positions and selection criteria, 1999–2000.

### **Conferences, workshops, special invited talks**

1. World Congress in Probability and Statistics, Istanbul, Turkey, July 9–12, 2012. Invited Session organizer. Forthcoming.
2. The 2nd Institute of Mathematical Statistics Asia Pacific Rim Meeting, Tsukuba, Japan, July 02–04, 2012. Distinguished Lecturer and Invited Session organizer. Forthcoming.
3. Economic Theory and Policy Conference, National Institute of Public Finance and Policy, New Delhi and Jawaharlal Nehru University, New Delhi, March 29–31, 2012. Invited speaker. Forthcoming.
4. National Seminar on Econometrics and Development Statistics, Department of Statistics, University of Calcutta, Kolkata, India, February 9–10, 2012. Invited speaker. Forthcoming.
5. Random Matrix Theory and its Applications, Indian Institute of Science, Bangalore, India, January 26 - February 1, 2012. Conference supported by International Centre for Theoretical Sciences, TIFR. Invited speaker. Forthcoming.
6. Twelfth Discussion Meeting on Harmonic Analysis. Stat.-Math. Unit, Indian Statistical Institute, Kolkata, India, December 27–29, 2011. Invited speaker.
7. Seminar on Random Matrices, Stat.-Math. Unit, Indian Statistical Institute, Kolkata, India, July 21–22, 2011. Organizer. Seminar supported by J.C. Bose Fellowship of Arup Bose.
8. Fourth Annual Conference on Entrepreneurship and Innovation, Northwestern University, Chicago, USA, June 16–17, 2011. Coauthor presented our joint invited paper at this prestigious conference. I was discussant to two papers.
9. Seventh Annual Conference on Models and Methods in Economics, Economics Research Unit, Indian Statistical Institute, Kolkata, India, February 02–03, 2011. Member, organizing committee. Conference supported by J.C. Bose Fellowship of Arup Bose.
10. Seminar on Probability and Statistics, Stat.-Math. Unit, Indian Statistical Institute, Kolkata, India, January 06–07, 2011. Joint Organiser (with Probal Chaudhuri). Seminar supported by J.C. Bose Fellowship of Arup Bose.
11. International Congress of Mathematicians, Hyderabad, India, August 18–27, 2010. Invited speaker.
12. ICM Satellite Conference on Probability and Stochastic Processes, Indian Statistical Institute, Bangalore, India, August 13–17, 2010. Invited speaker. Also organised a session on Random Matrix. Member, Local Organizing Committee.
13. Conference on Economic Theory, Markets and Institutions of Governance, Jawaharlal Nehru University and National Institute of Public Finance and Policy, New Delhi, India, March 22–24, 2010. Invited speaker.
14. International Colloquium on “Perspectives in Fundamental Research”, in celebration of the birth centenary of Dr. Homi J. Bhaba, Tata Institute of Fundamental Research, Mumbai, India, March 03–06, 2010. Invited speaker.

15. One day seminar in memory of Sir Clive Granger, Economics Research Unit, Indian Statistical Institute, Kolkata, India, January 12, 2010. Invited speaker.
16. Conference on Advances in Statistics in honor of Professor Bai Zhidong on his 65th birthday, National University of Singapore, July 20, 2008. Invited speaker.
17. 7th World Congress in Probability and Statistics, National University of Singapore, July 14-19, 2008. Chair of an invited session.
18. Workshop on High-Dimensional Data Analysis, Institute of Mathematical Sciences, National University of Singapore, Feb. 27-29, 2008. Member, Organizing committee. Also gave an invited talk and chaired a session.
19. Hyderabad Symposium in Probability and Statistics, University of Hyderabad, India, December 17-19, 2007. Invited speaker.
20. Conference on Recent Advances in Probability, Indian Statistical Institute, Kolkata, India, December 11-15, 2007. Member, Organizing committee.
21. Lecture on Resampling at Reserve Bank of India, Mumbai, India, on the occasion of Statistics Day, May 29, 2007. Invited lecture.
22. Lectures on Random Matrices at the *First Lectures on Probability and Stochastic Processes*, Indian Statistical Institute, New Delhi, Nov. 25-27, 2006.
23. Workshop on Large Dimensional Random Matrices, Institute of Mathematical Sciences, National University of Singapore, March 04-15, 2006. Invited speaker, two talks.
24. A.K.Basu Memorial Seminar on Statistical Modelling and Applications, University of Calcutta, India, March 02-03, 2006. Invited speaker.
25. National Conference on Statistical Inference, Pune University, Pune, India, January 8-10, 2006. Invited speaker. Also chaired a session.
26. ISI-Academia Sinica Conf. on Probability and Statistics, Kolkata, Indian Statistical Institute, Kolkata, India, Jan 4-6, 2006. Member, Organizing committee.
27. Sixth Annual Conference on Mathematical Methods in Economics, Economics Research Unit, Indian Statistical Institute, Kolkata, India, Dec 28-30, 2005. Chaired a session.
28. Asian Mathematical Conference, National University of Singapore, Singapore, July 18-23, 2005. Invited speaker.
29. National seminar on order statistics and concomitants. University of Mysore, India, November 26-28, 2004. Invited speaker. Also chaired a session.
30. Conference of the International Chinese Statistical Association, National University of Singapore, Singapore, July 20-24, 2004. Invited speaker. Also chaired a session.
31. Fifth Triennial Calcutta Symposium on Probability and Statistics, University of Calcutta, Kolkata, India, Dec. 28-31, 2003. Invited speaker.
32. Annual conference of the Indian Society for Probability and Statistics, Pune University, Pune, India, January, 2002. Invited speaker. Also chaired a session.
33. Statistics and Mathematics Conference in honour of Professor J.K. Ghosh and Professor K.R. Parthasarathy, Indian Statistical Institute, New Delhi, India, Jan 18-21, 2002.
34. International Conference in honour of eightieth birthday of Professor C R Rao, Indian Statistical Institute, Kolkata, India, Dec 29-30, 2000. Organised and chaired a session for Young Researchers.

35. Workshop on Limit Theorems in Probability, Department of Statistics, University of Mysore, India, Sept. 04-07, 2000 Invited speaker.
36. International Workshop on Statistics and Probability, Indian Statistical Institute, New Delhi, India, Dec 17-Dec 21, 1999. Invited speaker. Also chaired a session.
37. XVIII Annual Conference of Indian Society for Probability and Statistics, Sambalpur University, India, Jan. 27-30, 1998. Invited speaker. Also chaired a session.
38. Joint International Conference of the Bernoulli Society and Indian Statistical Institute, Calcutta, India, Dec 29, 1997-Jan 01, 1998 Organised a session.
39. Third Triennial Calcutta Symposium on Probability and Statistics, Calcutta, India, Dec. 26-28, 1997. Invited speaker.
40. International conference on stochastic and numerical modelling and applications, Utkal University, Bhubaneswar, India, January 6-8, 1997. Invited speaker.
41. Workshop on life testing and reliability, Calcutta University, Kolkata, India, June 23-24, 1995. Invited speaker.
42. Eightysecond Session of the Indian Science Congress, Jadavpur University, Kolkata, India, Jan. 3-8, 1995. Invited speaker.
43. Second Triennial International Symposium on Statistics, Calcutta University, Kolkata, India, Dec. 30, 1994-Jan. 2, 1995. Invited speaker.
44. XV Annual Conference of Indian Society for Prob. and Stat., Dec. 21-23, 1994, Manonmaniam Sundarnar University, Tirunelveli, India. Invited speaker. Also chaired a session.
45. Fifth Purdue symposium on Statistical Decision Theory and related Topics, Purdue University, West Lafayette, USA, June 14 -19, 1992. Invited speaker. Also chaired a session.
46. Seventyninth session of Indian Science Congress Association at M. S. University, Baroda, India, January 3–8, 1992. Invited speaker.
47. Discussion meeting on Stochastic Differential Equations at Indian Institute of Sciences, Bangalore, India, June 10–12, 1991. Invited speaker.
48. Seventy Third Session of Indian Science Congress Association at Delhi University, India, January 3–8, 1986. Invited speaker.
49. National Seminar on Statistical Inference, Stochastic Processes and Sample Surveys at Sambalpur University, Sambalpur, India, Dec. 21–26, 1985. Invited speaker.
50. XIII International Conference on Stochastic Processes and their Applications at Banaras Hindu University, Varanasi, India, Dec. 17–21, 1983. Invited speaker.

#### **Selected Short visits/lectures (in alphabetic order)**

*Florida State University, Tallahassee, USA; March 1987.*

*George Washington University, Washington D.C., USA; March 1988.*

*Indian Institute of Science, Bangalore, India: October 2009; October 2011.*

*Indian Institute of Technology, Mumbai, India: April 1995.*

*Indian Institute of Technology, Guwahati, India: March 2005.*

*Indiana University-Purdue University at Indianapolis, USA: October 2010; September 2009; October 2005; April 2000; Feb. 2000.*

*Indiana University, Bloomington, USA, November 2010.*

*Institute of Mathematical Sciences, National University of Singapore: March 2006.*

*M.S. University, Vadodara*, July 2002. Delivered the N.M. Bhatt Lecture Series.  
*Michigan State University*, East Lansing, USA: March–April 2000.  
*National University of Singapore*: November 2007; July 2005; July 2004; May–June 2000.  
*Northern Illinois University*, DeKalb, USA: March 2000; December 1989.  
*Panjab University*, Chandigarh, India, October 2003.  
*Pune University*, India: March–April 1995.  
*Purdue University*, West Lafayette, Indiana, USA; January 1993.  
*Rutgers University, Camden*, New Jersey, USA; March 1996.  
*Rutgers University, New Brunswick*, New Jersey, USA: April 2000; March 1996.  
*Stanford University*, Stanford, California, USA: May 2001.  
*University of California, Davis*, USA: June 2001.  
*University of California, Riverside*, USA: May 2001.  
*University of California, San Diego*, USA: March 2000. Prestigious *Week Long Visitor*.  
*University of Cincinnati, Ohio*, USA: December 2011; October–November, 2010; May–June 2010; May–July 2009; August–September 2009; April–July 2008; June–July 2006; October–December 2005; May 2000.  
*University of Connecticut*, Storrs USA; October 1995; October 1992.  
*University of Georgia*, Athens, USA: April 2000; April 1993.  
*University of Hyderabad*, India: February 2009; January 1998; March–April 1997.  
*University of Illinois, Urbana Champaign*, USA; February 2000 (delivered the annual joint colloquium of the Dept. of Statistics, Purdue University and Urbana Champaign); April 1996; March 1990 (delivered the annual joint colloquium).  
*University of Maryland, Baltimore County*, USA: June 17–19, 2008; April 1996; Nov. 1995; June–July 1992.  
*University of Minnesota*, USA; November 2011.  
*University of Mysore*, India.  
*Yale University*, Connecticut, USA: September 2009.

## Research Collaborators:

### *Current collaboration with:*

*Subhadip Bandyopadhyay*, Infosys, Hyderabad, India  
*Sayan Banerjee*, Graduate student, University of Washington, Seattle, USA  
*Anirban Basak*, Graduate student, Stanford University, California, USA  
*Riddhipratim Basu*, Graduate student, University of California, Berkeley, USA  
*Abhishek Bhattacharya*, Indian Statistical Institute, Kolkata  
*Satya Ranjan Chakraborty*, Indian Statistical Institute, Kolkata, India  
*Conchita D'Ambrosio*, Università Di Milano-Bicocca and Università Bocconi, Italy  
*Santanu Dutta*, Tezpur University, Assam, India  
*Sreela Gangopadhyay*, C.R. Rao Institute, Hyderabad, India  
*Shirshendu Ganguly*, Graduate student, University of Washington, Seattle, USA  
*Barnali Gupta*, Miami University, Ohio, USA  
*Rajat Subhra Hazra*, University of Zurich, Switzerland  
*Debashis Pal*, University of Cincinnati, Ohio, USA  
*Koushik Saha*, Bidhannagar Government College, Kolkata, India  
*David Sappington*, University of Florida, USA  
*Sanchayan Sen*, Graduate student, University of California, Berkeley, USA.  
*Radhendushka Srivastava*, Cornell University, USA

*Past collaboration with:*

*G.J.Babu*, Pennsylvania State University, USA  
*Atasi Basu*, Utica College, New York, USA  
*Srabashi Basu*, Kolkata, India  
*S.K.Bhandari*, Indian Statistical Institute, Kolkata, India  
*J.P.N.Bishwal*, University of North Carolina, Charlotte, USA  
*Benzion Boukai*, Indiana University-Purdue University at Indianapolis, USA  
*T.K.Chandra*, Indian Statistical Institute, Kolkata, India  
*Snigdhasu Chatterjee*, University of Minnesota, USA  
*Sourav Chatterjee*, Courant Institute, New York, USA  
*Probal Chaudhuri*, Indian Statistical Institute, Kolkata, India  
*Amites Dasgupta*, Indian Statistical Institute, Kolkata, India  
*Anirban DasGupta*, Purdue University, Indiana, USA  
*Ratan Dasgupta*, Indian Statistical Institute, Kolkata, India  
*Aloke Dey*, Indian Statistical Institute, New Delhi, India  
*J.K.Ghosh*, Purdue University, Indiana, USA  
*Alok Goswami*, Indian Statistical Institute, Kolkata, India  
*Suman Guha*, Graduate student, Indian Statistical Institute, Kolkata, India  
*Krishanu Maulik*, Indian Statistical Institute, Kolkata, India  
*Joydip Mitra*, Management Development Institute, Gurgaon, India  
*Kanchan Mukherjee*, University of Liverpool, UK  
*Nitis Mukhopadhyay*, University of Connecticut, Storrs, USA  
*N.K.Nagaraj*, University of Maryland, Baltimore, USA  
*Dimitris Politis*, University of California, San Diego, USA  
*Anindya Roy*, University of Maryland, Baltimore County, USA  
*Herman Rubin*, Purdue University, Indiana, USA  
*Anish Sarkar*, Indian Statistical Institute, New Delhi, India  
*Arnab Sen*, Cambridge University, UK  
*Arusharka Sen*, Concordia University, Canada  
*Arindam Sengupta*, University of Calcutta, India  
*Debapriya Sengupta*, Indian Statistical Institute, Kolkata, India  
*Debasis Sengupta*, Indian Statistical Institute, Kolkata, India  
*Bikas K.Sinha*, Indian Statistical Institute, Kolkata, India  
*T.N.Sriram*, University of Georgia, Athens, USA.