

CV of Dr. Ashim Kumar Roy

Designation : Assistant Professor
Institute : Indian Statistical Institute, Kolkata
Unit : Physics & Applied Mathematics Unit
Date of joining (as Lecturer) : 14. 08. 2000
Date of birth : 07.09 .1954

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Educational Qualifications :

B.Sc.(Hons.in Physics) : Ist class with distinction in Mathematics
(1971-1973) from St. Xaviers' College, Ranchi Univ.

M.Sc.(Physics) : Ist class, from I.I.T.Kharagpur.
(1973-1975) (Special papers: - Nuclear & Particle Physics)

Post Msc.(Nucl.Phys.) : 1 year pre-research diploma from Saha
(1975-1976) Institute of Nuclear Physics, Kolkata.

Ph.D.(Sc.) : Degree received in 1994 from Univ of Calcutta
(1985-1991) for researches on some problems of Quantum Field
Work done at, Indian Statistical Institute,

Let me mention here that-- during 1976-1978, I had been a research fellow at the Saha Institute. Thence, from 1979-1985 , I served the Indian Bank as an officer.

Complete List of Publications

1. Probability of K-electron capture in ^{108}mAg . *Physical review C* **Vol.19, No.4, April 1979** pp.1564-1567. (S.I.N.P. Collaboration. Co-authors:- B.K. Dasmahapatro, P.Mukherjee, A.Sengupta ; all from Saha Institute of Nuclear Physics, Calcutta.)
2. Topological aspects of a fermion and the chiral anomaly. *Journal of Mathematical Physics* **30(10)Oct.1989** , 2366-2372. (Ph.D. Thesis.)
3. Topological aspects of the Liouville field theory and the conformal anomaly. *Journal of Mathematical Physics* **33(3) Mar.1992**, pp.1178-1184.(Ph.D. Thesis.)
4. Gravitational anomaly and the world topology. *Mod. Physics Letts.A* **Vol.7, No.1, 1992**, pp.33-42.(Ph.D.Thesis.)
5. Topological aspects of the SU(2) Weyl fermions and the global anomaly. *Journal of Mathematical Physics* **35(6) June1994**, pp.2818-2827.
(In 2, 3, 4 and 5 ; Co-author:- P. Bandyopadhyay , research guide, Indian Statistical Institute , Calcutta.)
6. On the validity of soft particle approximation for the light scattering by a homogeneous dielectric sphere. *Journal of Modern Optics* ,**1996, Vol. 43, No.11** pp. 2225 - 2237. (Co-author – S.K.Sharma, S.N.Bose National Centre for Basic Sciences , Calcutta.)
7. Gauge and shape independence of fractional spin of deformed solitons in the (2+1) dimensional O(3) sigma model. *Int. Journal of Mod. Phys.A* **Vol.11, No.4, 1996**, pp.759.
8. Topological invariance of fractional spin of abelian C-S-H vortex. *Int. Journal of Modern Phys.A* , **Vol.12, No.13, 1997**, pp. 2343-2359.
9. A semi-analytic approach within the framework of anomalous diffraction approximation for transverse magnetic scattering of light by an infinitely long cylinder at normal incidence. *Pure and Applied Optics*,**6 (1997)** , pp.565 – 575. (Co-authors:- S.K.Sharma, SNBNSBS and D.J.Sommerford, Univ.of Cardiff, U.K.)
10. Inverse scattering problem involving soft Mie particles. *Applied Optics*, **Vol. 36, No.36, 1997**, pp. 9487-9495. (Co-author- S.K.Sharma, SNBNCBS.)
10. New approximate phase functions for scattering of unpolarized light by dielectric particles. *Jour. of Quantitative Spectroscopy and Radiative transfer* , **Vol.60, No.6, 1998**, pp.1001-1010. (Co-authors:- S.K. Sharma, SNBNCBS and D. J. Sommerford, Univ. of Cardiff, U.K.)

12. New approximate phase functions : test for non-spherical particles.
Jour. of Quantitative Spectroscopy and Radiative Transfer , **64** (2000), pp.327 – 337. (Co-author :- S.K.Sharma, SNBNCBS.)
13. A simple analysis of the extinction spectrum of a size distribution of Mie Particles, *Journal of Optics A : Pure and Applied optics* **7** (2005)675-684.
(Co-author : - S.K.Sharma, SNBNCBS.)
14. On the validity of phase functions used in calculations of electromagnetic wave scattering by interstellar dust. *The Astrophysical Journal Supplementary series* **177 ; 2008 August**, 546 - 550. (Co-author:- S.K.Sharma , SNBNCBS.)
15. Large diamagnetic persistent currents. *New Journal of Physics* **10** (2008) **083014** (12 pp). (Co-authors:- S.S.Chowdhury , P.Singha Deo of SNBNCBS & M. Manninen of Univ. of Jyvaskyla, Finland.)
16. A simple parametrized phase function for small non-absorbing spheres.
Journal of Quantitative Spectroscopy and Radiative Transfer **109**(2008) 2804-2812 . (Co-author:- S.K.Sharma, SNBNCBS.)
17. A study of frequency and size distribution dependence of extinction for astronomical silicate and graphite grains. *Journal of Quantitative Spectroscopy and Radiative Transfer* **110** (2009) 1733 - 1740.
(Co-authors:- S.K.Sharma and R.Gupta , Inter-University Centre for Astronomy and Astrophysics , PUNE.)
18. Frequency and size distribution dependence of visible and infrared extinction for astronomical silicate and graphite grains.
Journal of Quantitative Spectroscopy and Radiative Transfer **111** (2010) 795.
(Co-authors:- S.K.Sharma and R.Gupta , Inter-University Centre for Astronomy and Astrophysics , PUNE.)
19. Analytic formulas for frequency and size dependence of absorption and scattering efficiencies of astronomical Polycyclic Aromatic Hydrocarbons .
Journal of Quantitative Spectroscopy and Radiative Transfer **113** (2012) 624.
(Co-authors:-S. K. Sharma, SNBNCBS ; R.GUPTA & P.RANADIVE of IUCAA, PUNE)

Details of teaching activities

2000 - 2001

B.Stat.2nd yr.Physics ; *Classical Thermodynamics*; 25 - 30 lectures.

2001 - 2002

B.Stat.2nd yr.Physics ; *Classical Thermodynamics and Molecular Kinetic Theory* ; 25 - 30 lectures.

2002 - 2003

B.Stat.2nd yr.Physics ; *Classical Thermodynamics & Selective Topics from Molecular and Atomic Physics* ; 50 - 55 lectures

2003 - 2004

B.Stat.2nd yr. Physics ; *Classical Thermodynamics & Selected Topics from Molecular and Atomic Physics*; 50 - 55 lectures.

2008

B.Stat.3rd yr.Mathematics ; *Differential Equations and Special Functions*; 30 - 35 lectures.

2009

ISEC 63rd Regular Course ; Mathematics - II ; *Basic level of Matrices & Determinants ; Elements of Set Theory ; Basics of Calculus.* 30-35 lectures.

2011- 2012

Course-work for the Research Fellows of I.S.I. Basics of Group Theory and Quantum Field Tkeory .

Academic administrations

Served as a member of the B.Stat. Selection Committee in the years - 2003 , 2005 .

Served as a member of the M.Tech. Selection Committee in the years - 2001 , 2004 , 2006 .

Internal moderator for B.Stat. 2nd yr. Physics Course's examinations - 2005-2006 , 2006-2007 , 2007-2008 , 2008-2009.

External expert for research work (Seminar) evaluation in the CBMS (Chemical , Biological & Micro-molecular Sciences) Dept. of JRFs in SNBNCBS - January , 2010.

Dean's nominee in evaluation of research work of students on the eve of JRF to SRF promotion in CBMS dept. SNBNCBS :- August , 2011.

Other relevant informations

Visits for Collaborations were made at the following research Institutions and Centres :-

- (1) S.N.Bose National Centre For Basic Sciences ; Six visits .
Aug.1 - 30, 2002 ; July14-29, 2005 ; Aug.29 - Sept. 23, 2005;
Aug.10 - Sept.9, 2006 ; Nov.5 - Dec.19, 2008 ; Nov.1 - Dec.30, 2009.
- (2) Inter University Centre for Astronomy and Astrophysics; PUNE.
Two visits . Nov.20 - Dec.1 , 2006 ; Feb.14 - 26 , 2011 .