

Bobby Antony

PROFESSOR OF PHYSICS

519 Academic Block, Department of Physics, IIT(ISM) Dhanbad, JH 826004, India

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"Set your course by the stars, not by the lights of every passing ship." ... O.N. Bradley

Education

SP University / The Open University

Anand, India / Milton Keynes, UK

PH.D. IN PHYSICS

2000-2005

- Received Commonwealth Split-Site Scholarship to UK; Awarded CSIR Senior Research Fellowship.

University of Calicut

Kerala, India

M.Sc. IN PHYSICS

1996-1998

- Top 5% in class with 7.0/10.

Christ College

Kerala, India

B.Sc. IN PHYSICS

1993-1996

- Top 1% in class with 8.8/10.

Research Interest

Electron induced chemistry

25 years of experience

(e^- – atom/molecule interaction)

2000 onwards

- Established computational facility to investigate 0.1 eV – 10 keV electron induced processes.
- Predicts various scattering cross section for atoms and molecules of applied interest.
- Investigates low energy electron scattering from molecules and detects resonances due to electron attachment.

Positron scattering dynamics

8 years of experience

(e^+ – atom/molecule interaction)

2017 onwards

- Designed and implemented positron scattering calculations through quantum mechanical approach.
- Prediction of scattering cross section for positron from many target systems in the energy range of 1 eV to 5 keV.
- Evaluation of positronium formation cross section.

Photoionization studies

6 years of experience

(photon – molecule interaction)

2019 onwards

- Computations of photoionization cross section for molecules.
- Implemented through UK R-matrix method.

Experience

TEACHING

06/2019	Professor , Indian Institute of Technology (Indian School of Mines), Dhanbad, India	6 years
07/2011	Associate Professor , Indian Institute of Technology (Indian School of Mines), Dhanbad, India	8 years
07/2008	Assistant Professor , Indian School of Mines, Dhanbad, India	3 years
08/2007	Lecturer , Mar Athanasius College, Kerala, India	1 year

RESEARCH

07/2008	Professor/Associate Professor/Assistant Professor , IIT(ISM), Dhanbad, India	17 years
03/2008	Visiting Fellow , TIFR, Mumbai, India	0.5 years
02/2005	Post-doctoral research associate , University of Massachusetts, Lowell, USA	2.5 years
03/2004	Senior Research Fellow , CSIR, New Delhi, India	1 year
01/2003	Commonwealth Research Scholar , Association of Commonwealth Universities, London, UK	1 year
10/2002	Senior Research Scholar , DST, New Delhi, India	1 year
10/2000	Junior Research Scholar , DST, New Delhi, India	2 years

Awards/Fellowships/Scholarships

8.	University of Kent, UK , Royal Society International Exchange Award	04/2023 to 03/2025
7.	University of Kent, UK , ASEM DUO-India Professors Fellowship	06/2022 to 08/2022
6.	TIFR, India , Visiting Fellow	04/2008 to 06/2008
5.	UMASS Lowell, USA , Post-doctoral Research Fellow	02/2005 to 05/2007
4.	CSIR, India , Senior Research Fellowship	04/2004 to 01/2005
3.	ACU, UK , Commonwealth Scholarship Award	01/2003 to 01/2004
2.	DST, India , Senior Research Fellowship	10/2002 to 01/2003
1.	DST, India , Junior Research Fellowship	10/2000 to 09/2002

Projects

6.	SERB , e^-/e^+ induced chemistry at the molecular level: investigation through scattering studies.	02/2021; ₹2.33Mn
5.	AICTE (Co-PI) , Implementation of electron scattering cross-section for calculation of plasma....	02/2021; ₹0.84Mn
4.	ISRO , e^- induced chemistry of molecules relevant to space applications.	04/2020; ₹2.46Mn
3.	SERB , Investigation of e^- scattering phenomena in biological & environment sensitive molecules.	05/2017; ₹2.66Mn
2.	UGC , e^- impact scattering cs for mols. of env. and biological importance: A theoretical study.	02/2014; ₹0.68Mn
1.	DST , e^- induced collision & ionization of technologically relevant atoms/mols.: A theoretical study.	05/2014; ₹1.19Mn

Publications

RECENT ONES

4.	MNRAS , <u>in press</u> (2025) .	Impact factor: 4.8
3.	RSC Advances , <u>14</u> (2024) 38855.	Impact factor: 3.9
2.	MNRAS , <u>533</u> (2025) 2048.	Impact factor: 4.8
1.	J. Appl. Phys. , <u>136</u> (2024) 044901.	Impact factor: 2.3

SUMMARY

SCI Journals	Proceedings/Non-SCI/Reports	Books/Monographs	Invited Talks	Abstracts
137	20	6	20	115

For complete list of publications (see annexure), or click the link →

[List of publications](#)

Research Supervision

PH.D. – ONGOING

17.	Mr. Soumyo Kheto , TBD	Joined: 07/2024
16.	Mr. Ashutosh Yadav , Theoretical investigation of Electron and Positron scattering from Biomolecules	Joined: 08/2023
15.	Mr. Sudhanshu Arya , Theoretical investigation of electron and positron scattering dynamics and photoionization processes for molecules	Joined: 08/2022
14.	Ms. Meenu Pandey , Theoretical study of electron interaction with Focused Electron Beam Induced Deposition (FEBID) Technique precursors molecules	Joined: 12/2021
13.	Ms. Sapna Mahla , Theoretical study of electron scattering and photoionization from atmospheric aerosols.	Joined: 12/2020
12.	Ms. Irabati Chakraborty , Electron, positron & photon scattering from different molecular systems.	Joined: 08/2019

PH.D. – AWARDED

11.	Ms. Himani Tomer , Electron induced chemistry of molecules relevant to space applications.	<i>Awarded: 04/2024</i>
10.	Dr. Nafees Uddin , Electron scattering studies on environmentally sensitive molecules.	<i>Awarded: 04/2023</i>
9.	Dr. Nidhi Sinha , Theoretical study of e^- and e^+ scattering from atomic and molecular targets.	<i>Awarded: 05/2021</i>
8.	Dr. Paresh Modak , Electron and photon collisions with atomic and molecular targets.	<i>Awarded: 12/2020</i>
7.	Dr. Suvam Singh , Electron and positron scattering dynamics in atoms and molecules.	<i>Awarded: 12/2019</i>
6.	Dr. Pankaj Verma , Investigation of electron scattering from molecules relevant to plasma.	<i>Awarded: 11/2018</i>
5.	Dr. Nagendra Siwakoti , Fabrication and modification of Schottky diodes.	<i>Awarded: 03/2018</i>
4.	Dr. Jaspreet Kaur , A theoretical pursuit to probe electron-molecule scattering phenomena.	<i>Awarded: 03/2016</i>
3.	Dr. Biplab Goswami , e^- induced collision and ionization of technologically relevant atoms/mols.	<i>Awarded: 02/2015</i>
2.	Dr. Dhanoj Gupta , e^- impact scattering cs for molecules of env. and biological importance.	<i>Awarded: 12/2014</i>
1.	Dr. Rahla Naghma , e^- impact scattering studies of mols. relevant to atm. application.	<i>Awarded: 09/2014</i>

SUMMARY OF RESEARCH SUPERVISION

Status	Post-Doc.	Ph.D.	M.Phil.	M.Sc.	B.Tech.	Interns
Ongoing	0	6	0	1	0	0
Awarded	2	11	3	32	8	3

For more information, click the link →

Research team

Editor Roles

- ◇ FRONTIERS IN PHYSICS - ASSOCIATE EDITOR

Peer Reviews

Journals

RECEIVED *Trusted Reviewer Status* FROM INSTITUTE OF PHYSICS (IOP)

- ◇ SPRINGER NATURE: *Scientific Reports*
- ◇ AIP: *Journal of Chemical Physics*
- ◇ IOP
 1. *Plasma Sources Science and Technology*
 2. *Journal of Physics B: Atomic, Molecular and Optical Physics*
 3. *Journal of Physics A: Mathematical and Theoretical*
- ◇ ELSEVIER
 1. *Chemical Physics Letters*
 2. *International Journal of Mass Spectrometry*
 3. *Planetary and Space Science*
 4. *Radiation Physics and Chemistry*
 5. *Physica Scripta*
 6. *Results in Physics*
 7. *Applied Radiation and Isotopes*
- ◇ SPRINGER: *The European Physical Journal D*
- ◇ RSC: *RSC Advances*
- ◇ WILEY: *International Journal of Quantum Chemistry*
- ◇ MDPI: *Atoms*
- ◇ TAYLOR AND FRANCIS: *Molecular Physics*

Projects

- ◇ SCIENCE AND ENGINEERING RESEARCH BOARD (SERB), INDIA
- ◇ SHOTA RUSTAVELI NATIONAL SCIENCE FOUNDATION (SRNSF), GEORGIA
- ◇ SHASTRI INDO-CANADIAN INSTITUTE, INDIA/CANADA
- ◇ BOARD OF RESEARCH IN NUCLEAR SCIENCES (BRNS), INDIA
- ◇ INDIAN SPACE RESEARCH ORGANISATION (ISRO)-RESPOND, INDIA
- ◇ COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH (CSIR), INDIA

Thesis

- ◇ INDIAN INSTITUTE OF TECHNOLOGY ROORKEE, INDIA
- ◇ INDIAN INSTITUTE OF TECHNOLOGY PATNA, INDIA
- ◇ SARDAR PATEL UNIVERSITY, INDIA
- ◇ BHARATHIDASAN UNIVERSITY, INDIA
- ◇ PRL, AHMEDABAD/MOHANLAL SUKHADIA UNIVERSITY, INDIA
- ◇ RAMAKRISHNA MISSION RESIDENTIAL COLLEGE, INDIA
- ◇ KANNUR UNIVERSITY, INDIA
- ◇ INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH KOLKATA, INDIA

Professional Memberships

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| 1. Indian Physical Society , Life member | LM/0928 |
| 2. Indian Society of Atomic and Molecular physics , Life member | 1244 |
| 3. Indian Association of Physics Teachers , Life member | L4818 |
| 4. Indian Science Congress Association , Life member | L15380 |
| 5. American Chemical Society , Affiliate | 30697127 |
| 6. American Physical Society , Affiliate | 61153812 |

Administrative Roles

Present

- Head, Department of Physics.
- Chairman, Departmental Faculty Screening Committee.
- Chairman, Doctoral Scrutiny Committees.
- Coordinator & Member, Board of Courses & Studies, Physics.
- External member, Doctoral Scrutiny Committee (DSC).
 - Electronics; Chemistry; Mathematics; English; Mining Engineering departments.

Past

ACADEMIC

- Dean Students' Welfare.
- Associate Dean (Student Activities).
- President, Sports and Physical Education Centre (SPEC).
- Technical Secretary to the Director.
- Vice-Chairman, JEE (Advanced).
- Vice-Chairman/Member, JRF Admission Committee.
- Chairman, Departmental Faculty Screening Committee.
- Member, Academic Review Committee.
- Member, Departmental Faculty Screening Committee.
- Member, Research Task Force (RTF).
- Member, International Relations.
- Member & Core Group Member, Central Library Committee.
- Member, NAAC & NBA Committee.
- Member Secretary, Departmental Advisory Committee.
- Member, Moderation Board (postgraduate program in Physics).
- Faculty-in-charge, Department Library.
- Faculty in-charge & Advisor, Integrated M.Sc. students, Physics.

OTHERS

- Coordinator, Swachh Bharat Abhiyan ('Clean India Mission').
- Chairman, ISM 90th Foundation Day Committee.
- Convener, Cencetto (Techno-Management Fest).
- Co-convener, Basant (Alumni meet).
- General Secretary, Scolomin Club (faculty and officers club).
- General Secretary, ISM Teachers Association.
- Quiz Master, Fr. Kriss Memorial inter-school Quiz competition (Jharkhand region).
- Judge in science exhibition, Dhanbad Public School.