

Bobby Antony

PROFESSOR OF PHYSICS

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

☎ (+91) 94701 94795 | ✉ bobby@iitism.ac.in | 🏠 www.iitism.ac.in/~bobby | 📺 bobbyantony | 📄 Publons

“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

9. **University of Kent, UK**, Visiting Professor 09/2025 to 08/2027
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

ONGOING

7. **GIAN**, *Astronomical Spectroscopy*, GIAN Course by Prof. Jonathan Tennyson, UCL London. 10/2025; ₹0.66Mn
6. **Royal Society, UK**, Leptonic collisions with macromolecular systems. 03/2023; £12,000

COMPLETED

5. **SERB**, e^-/e^+ induced chemistry at the molecular level: investigation through scattering studies. 02/2021; ₹2.33Mn
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 (2025)

1. Photoionisation study of simple organic compounds using the R-matrix method. *MNRAS* **542** (2025) 2377-2388.
2. Investigation of Electron Collisions with Organic Phosphates. *J. Phys. Chem. A* **129** (2025) 8013-8023.
3. Theoretical Study of Electron Interaction from Glucose Molecule in Aqueous Phase. *J. Phys. Chem. B* **129** (2025) 8494-8500.
4. Electron scattering from oxetane and thietane and their isomers. *J. Appl. Phys.* **137** (2025) 224903.
5. R-matrix calculations of photoionization cross sections of sulfur-containing compounds. *MNRAS* in press (2025).
6. Computation of electron interaction with halide precursors. *Rad. Phys. Chem.* **229** (2025) 112502.

[Click here for the complete list of publications.](#)

SUMMARY

SCI Journals	:142	Reports	: 3	Citations: 2100+ h-index : 25+
Proceedings	: 11	Invited Talks	: 21	
Books / Monographs	: 6	Book of abstract	:118	
Other Journals	: 6			

Research Supervision

PH.D. – ONGOING

20. **Ms. Swapnarani Behera**, TBD. Joined: 07/2025
19. **Ms. Monalisa Mohapatra**, TBD. Joined: 07/2025
18. **Mr. Soumyo Kheto**, TBD. Joined: 07/2024
17. **Mr. Ashutosh Yadav**, Theoretical investigation of Electron and Positron scattering from Biomolecules. Joined: 08/2023
16. **Mr. Sudhanshu Arya**, Theoretical investigation of electron and positron scattering dynamics and photoionization processes for molecules. Joined: 08/2022
15. **Ms. Meenu Pandey**, Theoretical study of electron interaction with Focused Electron Beam Induced Deposition (FEBID) Technique precursors molecules. Joined: 12/2021
14. **Ms. Irabati Chakraborty**, Electron, positron & photon scattering from different molecular systems. Joined: 08/2019

PH.D. – AWARDED

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| 13. | Ms. Sapna Mahla , Theoretical study of electron scattering and photoionization from atmospheric aerosols. | <i>Joined: 12/2020</i> |
| 11. | Ms. Himani Tomer , Electron induced chemistry of molecules relevant to space applications. | <i>Joined: 08/2017</i> |
| 10. | Mr. Nafees Uddin , Electron scattering studies on environmentally sensitive molecules. | <i>Joined: 03/2015</i> |
| 9. | Ms. Nidhi Sinha , Theoretical study of e^- and e^+ scattering from atomic and molecular targets. | <i>Awarded: 05/2021</i> |
| 8. | Mr. 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. (Mrs.) 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. (Mrs.) 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	7	0	0	1	0
Awarded	2	13	3	32	7	3
Total	2	20	3	32	8	3

Editor Roles

- ◇ FRONTIERS IN PHYSICS - ASSOCIATE EDITOR
- ◇ SCIENTIFIC REPORTS - EDITORIAL BOARD MEMBER

Peer Reviews

Journals

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

- ◇ SPRINGER NATURE
 1. *Scientific Reports*
- ◇ AIP
 1. *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
 1. *The European Physical Journal D*
- ◇ RSC
 1. *RSC Advances*
- ◇ WILEY
 1. *International Journal of Quantum Chemistry*
- ◇ MDPI
 1. *Atoms*
- ◇ TAYLOR AND FRANCIS
 1. *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
- ◇ ISRO RESPOND, 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
- ◇ CH. CHARAN SINGH UNIVERSITY, INDIA

Professional Memberships

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| 1. | Institute of Physics (IOP), UK , Associate Member | 80467066 |
| 2. | Indian Physical Society , Life member | LM/0928 |
| 3. | Indian Society of Atomic and Molecular physics , Life member | 1244 |
| 4. | Indian Association of Physics Teachers , Life member | L4818 |
| 5. | Indian Science Congress Association , Life member | L15380 |
| 6. | American Chemical Society , Affiliate | 30697127 |
| 7. | American Physical Society , Affiliate | 61153812 |

Administrative Roles

Present

- Chairman, Departmental Faculty Screening Committee.
- Chairman, Doctoral Scrutiny Committees.
- Coordinator & Member, Board of Courses & Studies, Physics.
- External member, Doctoral Scrutiny Committee (DSC).

Past

- Electronics; Chemistry; Mathematics; English; Mining Engineering departments.

ACADEMIC

- Head, Department of Physics.
- 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.