

Curriculum Vitae

Dr. Ghanshyam Purohit

Qualification: Ph. D. (Atomic Physics), M. Sc. (Physics)

Area of Specialization: Atomic Physics, electron / positron – atom / ion / molecule collision studies, electron spectroscopy

Research Interests: Theoretical physics, electron / positron – atom / ion collision studies, electron spectroscopy, non-linear dynamics, complex systems. biophysics, quantum information theory, quantum computation, spintronics, renewable energy

Designation: Associate Professor

Affiliation: Department of Physics
University College of Science
M. L. S. University
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Employment:

S. No.	Period	Designation / Post	University / Institute, Address
1.	02.07.2018 – Continue	Associate Professor	University College of Science M. L. S. University, Udaipur, India
2.	01.04.2014 – 01.07.2018	Professor	Sir Padampat Singhania University, Udaipur-313601, Rajasthan, India
3.	26.06.2017 – 25.04.2018	JSPS Long Term Invitational Fellow	National Institute for Natural Science, National Institute for Fusion Science, Toki, Gifu, Japan

4.	01.09.2009 – 31.03.2014	Associate Professor	Sir Padampat Singhania University, Udaipur-313601, Rajasthan, India
5.	29.09.2011 – 03.02.2012	Visiting Professor	Faculty of Science and Engineering, Sophia University, Tokyo, Japan
6.	08.09.2007 – 31.08.2009	Assistant Professor	Sir Padampat Singhania University, Udaipur-313601, Rajasthan, India
7.	01.07.2006 – 07.09.2007	Assistant Professor	Mody Institute of Technology and Science, Lakshmangarh-332311, Sikar, Rajasthan, India
8.	13.10.2005 – 30.06.2006	Lecturer	Mody Institute of Technology and Science, Lakshmangarh-332311, Sikar, Rajasthan, India
9.	01.10.2004 – 11.10.2005	Lecturer	Geetanjali Institute of Technical Studies, Udaipur-313001, Rajasthan, India
10.	01.01.2002 – 30.06.2004	Senior Research Fellow	University, College of Science, M. L. S. University, Udaipur-313001, Rajasthan, India
11.	01.01.2000 – 31.12.2001	Junior Research Fellow	University, College of Science, M. L. S. University, Udaipur-313001, Rajasthan, India
12.	25.09.1999 – 31.12.1999	Research Assistant	University, College of Science, M. L. S. University, Udaipur-313001, Rajasthan, India

List of Publications

A. Refereed journals

1. Electron and positron impact single ionization TDCS of argon atoms in the second Born approximation
G. Purohit
Nuclear Inst. and Methods in Physics Research B 487, 52 (2021).
Impact Factor: 1.27
2. Calculation of electron induced ionization cross sections of fusion plasma relevant material: W atoms
G. Purohit, D. Kato, I. Murakami, Shivani Gupta and P. Sinha
Eur. Phys. J. D 75, 9 (2021).
Impact Factor: 1.366
3. Low energy electron and positron impact differential cross sections for the ionization of water molecules in the coplanar and perpendicular kinematics
P. Singh, **G. Purohit**, C. Champion, D. Sébilleau and D. Madison
J. Chem. Phys. **150**, 054304 (2019).
Impact Factor: 2.965
4. Projectile charge effects on the differential cross sections for the ionization of molecular nitrogen by positrons and electrons
G. Purohit and D. Kato
J. Phys. B: At. Mol. Opt. Phys. 51, 135202 (2018).
Impact Factor: 1.792
5. Calculations for electron impact ionization of Be atoms and its charged states, Be⁺ and Be²⁺
G. Purohit and D. Kato
J. Phys. B: At. Mol. Opt. Phys. 51, 135201 (2018).
Impact Factor: 1.792
6. Electron impact ionization cross sections of tungsten atoms and tungsten ions
G. Purohit, D. Kato and I. Murakami
Plasma and Fusion Research 13, 3401026 (2018).
7. Dependence of electron impact differential cross sections on the ionic charge to radius ratio for the Al³⁺(2p) and Be²⁺(1s) ions
G. Purohit and D. Kato
J. Chem. Phys. 148, 084307 (2018).
Impact Factor: 2.965

8. Electron impact differential cross sections of Kr (4p) atoms for the perpendicular plane emission of final state electrons.
G. Purohit and D. Kato
J. Elec. Spec. Rel. Phenom. 222, 63 (2018).
Impact Factor: 1.661
9. Projectile-charge dependence of the differential cross section for the ionization of argon atoms at 1 keV
G. Purohit and D. Kato
Phys. Rev. A 96 (4), 042710 (2017).
Impact Factor: 2.991
10. Differential cross sections for the electron impact ionization of Ar (3p) atoms for equal energy final state electrons
G. Purohit and P. Singh
Eur. Phys. J. D 71, 143 (2017)
Impact Factor: 1.228
11. Triple differential cross section for the near threshold single ionization of helium atoms for equal energy sharing
G. Purohit, P. Singh, A. Dorn, X. Ren, V. Patidar
Journal of Electron Spectroscopy and Related Phenomena 209, 40-45 (2016).
Impact Factor: 1.552
12. Calculation of fully differential cross sections for the near threshold double ionization of helium atoms
P. Singh, **G. Purohit**, A. Dorn, X. Ren and V. Patidar
J. Phys. B: At. Mol. Opt. Phys. 49, 025201 (2016).
Impact Factor: 1.916
13. Fully differential cross-section for low to intermediate energy perpendicular plane ionization of xenon atoms
G. Purohit, Prithvi Singh and Vinod Patidar
Journal of Electron Spectroscopy and Related Phenomena 197, 50-55 (2014).
Impact Factor: 1.552
14. Electron- and positron-induced ionization of water molecules: theory versus experiments at triply differential scale
Prithvi Singh, **G. Purohit**, C. Champion and Vinod Patidar
Physical Review A 89, 032714 (2014).
Impact Factor: 2.991
15. Second order Born effects in the coplanar to perpendicular plane single ionization of Xe(5p)
Prithvi Singh, **G. Purohit** and Vinod Patidar
Journal of Physics B: At. Mol. Opt. Phys. 46 (11), 115207 (2013).
Impact Factor: 1.916

16. Effects of target polarization and post-collision interaction on the electron-impact single ionization of Ne(2p), Ar(2p) and Na(3s) atoms
G. Purohit, Prithvi Singh, Vinod Patidar, Y. Azuma and K. K. Sud
 Physical Review A 85 (2), 022714 (2012).
Impact Factor: 2.991

17. Differential cross section calculations of positron and electron impact ionization of Ar (3p)
G. Purohit, Vinod Patidar and K. K. Sud
 Nuclear Inst. and Methods in Physics Research B 269 (8), 745-751 (2011).
Impact Factor: 1.186

18. Triple differential cross section of potassium for doubly symmetric ionization
G. Purohit, Vinod Patidar and K. K. Sud
 Physics Letters A (Elsevier) 374, 2654 (2010).
Impact Factor: 1.766

19. Importance of polarization effects in electron impact single ionization of argon atom
G. Purohit, Vinod Patidar and K. K. Sud
 J. Electron Spectroscopy and Related Phenomena (Elsevier), 175, 1-5 (2009)
Impact Factor: 1.552

20. (e, 2e) triple differential cross sections of Ca atoms at low energies
G. Purohit, Vinod Patidar and K. K. Sud
 Physica Scripta (IOP, Britain publishing) 80, 065301 (2009).
Impact Factor: 1.296

21. (e, 2e) triple differential cross sections of alkali and alkali earth atoms: Na, K and Mg, Ca
 U. Hitawala, **G. Purohit** and K. K. Sud
 J. Phys. B: At. Mol. Opt. Phys. (IOP, Britain Publishing) 41, 035205 (2008).
Impact Factor: 1.916

22. Interference effect in the relativistic inner shell ionization of atoms by electron impact
G. Purohit, R. Choubisa and K. K. Sud
 Journal of Plasma and fusion Research Series (Japanese Society of Plasma and Fusion Research) Vol. 7, 290-293 (2006).
Impact Factor: --

23. Spin asymmetry in (e, 2e) processes on Li, Be⁺, B⁺² and C⁺³ targets by transversely polarized targets.
G. Purohit, R. Choubisa, Vinod Patidar and K. K. Sud
 Physica Scripta (IOP, Britain Publishing) 69, 208-215 (2004).
Impact Factor: 1.296

24. Electron impact single and double ionization of He like ions
G. Purohit, R. Choubisa, D. K. Sharma and K. K. Sud
 Indian J. Phys. B (Springer) 78 (10), 1067 (2004).
Impact Factor: 1.785

25. Electron dichroism effects in relativistic (e, 2e) processes for K-shell ionization of atoms
K. K. Sud, **G. Purohit** and A. S. Bhullar
Pramana-J. Phys. (Springer) 62, 1157 (2004).
Impact Factor: 0.720

26. (e, 2e) triple differential cross sections of He, Ne, Ar, Kr and Xe atoms in coplanar to perpendicular plane geometry
G. Purohit, A. S. Bhullar and K. K. Sud
Indian J. Phys. B (Springer) 77(2) 177-184 (2003).
Impact Factor: 1.785

27. Second order Born calculation of (e, 3e) process on He atom in coplanar constant θ_{12} mode
R. Choubisa, **G. Purohit** and K. K. Sud
J. Phys. B: At. Mol. Opt. Phys. (IOP, Britain Publishing) 36, 1731-1738 (2003).
Impact Factor: 1.916

28. Dynamical behavior of parametrically driven Duffing and externally driven Helmholtz-Duffing oscillators under nonlinear dissipation,
Vinod Patidar, Anjali Sharma and **G. Purohit**, Nonlinear dynamics 83(1-2), 375-388 (2016).
Impact Factor: 3.464

29. Effects on the bifurcation and chaos in forced Duffing oscillator due to nonlinear damping.
Anjali Sharma, Vinod Patidar, **G. Purohit**, and K. K. Sud, Communications in Nonlinear Science and Numerical Simulation 17 (6), 2254-2269 (2012).
Impact Factor: 2.784

30. Modified substitution-diffusion image cipher using chaotic standard and logistic maps.
Vinod Patidar, N. K. Pareek, **G. Purohit** and K. K. Sud, Communications in Nonlinear Science and Numerical Simulation 15, 2755 (2010)
Impact Factor: 2.784

31. A robust and secure chaotic standard map based pseudorandom permutation-substitution scheme for image encryption
Vinod Patidar, N. K. Pareek, **G. Purohit** and K. K. Sud, Optics Communications 284 (19), 4331-4339 (2011).
Impact Factor: 1.45

32. Dynamical behaviour of q-deformed Henon map
Vinod Patidar, **G. Purohit** and K. K. Sud, International Journal of Bifurcation and Chaos 21 (5), 1349-1356 (2011).
Impact Factor: 1.329

33. Bifurcation and chaos in periodically forced and nonlinearly damped pendulum
Anjali Sharma, Vinod Patidar and **G. Purohit**, International Journal of Nonlinear Sciences and Numerical Simulation 14 (3-4), 179-188 (2013).
Impact Factor: 0.89

B. Book Chapters

1. Electron dichroism in the relativistic (e, 2e) processes on atoms
A. S. Bhullar, **G. Purohit**, R. Choubisa, V. Patidar and K. K. Sud
"Recent advances in atomic and molecular physics" (Edited by Rajesh Srivastava)
(Phoenix), p 314 (2001).
ISBN: 9788174840-424
2. Up-down asymmetry in the relativistic (e, 2e) process for K-shell ionization of Cu, Ag and Au atoms
G. Purohit, R. Choubisa and K. K. Sud
ICTP (Italy) Preprint No. IC/2003/76 (2003).

C. Refereed conference proceedings and other publications

1. Calculation of FDCS for the low and intermediate energy electron impact ionization of water molecules
G. Purohit, P. Singh, A. Dorn and V. Patidar
J. Phys.: Conference Series 635, 012031 (5pp) (2015).
2. Calculation of FDCS for the low and intermediate energy electron impact ionization of water molecules
G. Purohit, P. Singh, A. Dorn and V. Patidar
J. Phys.: Conference Series 635, 072033 (1pp) (2015).
3. Second order Born effects in the perpendicular plane ionization of Xe(5p) atoms
G. Purohit, P. Singh and Vinod Patidar
Japan Physical Society Conference Proceedings 1, 013082 (2014).
4. Calculation of (e, 2e) triple differential cross sections of Mg in coplanar geometry
G. Purohit, Vinod Patidar and K. K. Sud
Journal of Physics: Conference Series 288, 012008 (8pp) (2011).
5. (e, 2e) processes on Ne, Ar and Xe targets
G. Purohit, Vinod Patidar and K. K. Sud
J. Physics: Conference Series (IOP, Britain publishing) 235, 012013 (2010).

D. List of papers presented in International and National conferences

1. Study of charge dependent effects in the electron and positron impact single ionization of inert gas targets
G. Purohit, 20th International Symposium on Correlation, Polarization and Ionization in Atomic and Molecular Collisions (COPIAMC), Metz, **France** (August 01-03, 2019).
2. Projectile charge effects on the differential cross sections for the ionization of N₂ molecules
G. Purohit, XIII Asian International Seminar on Atomic and Molecular Physics (AISAMP13) (Mumbai, December 03-08, 2018).
3. Electron impact ionization cross sections of tungsten atoms and tungsten ions
G. Purohit and D. Kato, 26th International Toki Conference and 11th Asian Fusion Plasma Association conference, Toki, Gifu, **Japan** (December 5-8, 2017).
4. Electron impact ionization differential cross sections for beryllium atoms
G. Purohit and D. Kato, Atomic Collision Society of Japan (ACSJ) Conference, Sophia University, Tokyo, **Japan** (September 8-9, 2017).
5. Differential cross sections for the electron impact ionization of Ar (3p) atoms for equal energy final state electrons
10th International Conference on Atomic and Molecular Data and Their Applications (ICAMDATA), Gunsan, **Rep. of Korea** (Sep. 25-29, 2016)
6. Low energy FDCS for the electron impact ionization of water molecules
XIX International Conference on Photonic, Electronic and Atomic Collisions (ICPEAC), Toledo, **Spain** (July 22-28, 2015)
7. Four Body Coulomb Problem: Low and intermediate energy electron impact double ionization of helium atoms
Gordon Research Conference on Quantum Science held at Stonehill College, MA, **USA** (July 27 – August 1, 2014)
8. Four Body Coulomb Problem: Probing the near threshold double ionization of helium atoms
Many Particle Spectroscopy of Atoms, Molecules, Clusters and Surfaces (MPS2014) conference held at Université de Lorraine, Metz, **France** (July 16-18, 2014)
9. Second order Born calculations of the coplanar to perpendicular plane ionization cross sections of xenon atoms
Gordon Research Conference on Time Dependent Density Functional Theory (TDDFT) held at University of New England, Biddeford, Maine, **USA** (August 11-16, 2013)

10. Second order Born calculations of the coplanar to perpendicular plane ionization cross sections of xenon atoms
Gordon Research Seminar on Time Dependent Density Functional Theory (TDDFT) held at University of New England, Biddeford, Maine, **USA** (August 10-11, 2013).
11. Second order Born effects in the perpendicular plane ionization of Xe(5p) atoms
12th Asia-Pacific Physics Conference (APPC) held at Chiba, **Japan** (July 14-19, 2013).
12. Calculation of triple differential cross section for the perpendicular plane ionization of noble gas targets
International Conference on Many Particle Spectroscopy of Atoms, Molecules, Clusters and Surfaces (MPS2012) held from August 27 – September 1, 2012 in **Berlin**, Germany
13. Calculation of the triple differential cross section for the electron impact ionization of noble gas targets
Conference on Computational Physics (CCP 2012) held from October 14 – 18, 2012 at Kobe, **Japan**
14. Importance of post collision interaction and polarization potential in the perpendicular plane ionization of xenon atoms
Gordon Research Conference (GRC) on Multiphoton Processes to be held at Mount Holyoke College, South Hadley, MA, **USA** (June 3 – 8, 2012)
15. Low and Intermediate energy electron and positron impact ionization of noble gas targets
Gordon Research Conference on X-ray Science held at Colby College, Waterville, Maine, **USA** (August 7-12, 2011)
16. Electron and positron impact ionization of helium and helium like ions
Gordon Research Seminar on X-ray Science held at Colby College, Waterville, Maine, **USA** (August 6-7, 2011)
17. Electron impact single ionization of noble gas targets in the perpendicular plane geometry
43rd European Group on Atomic Systems (EGAS) conference held at University of Fribourg, Fribourg, **Switzerland** (June 28 – July 2, 2011)
18. Calculation of triple differential cross section for the positron and electron impact ionization of Ar atom
Gordon Research Conference on Multiphoton Processes held at Tilton School, Tilton, NH, **USA** (June 6-11, 2010)
19. Calculation of (e, 2e) triple differential cross sections of Mg in coplanar geometry
International Conference on Many Particle Spectroscopy of Atoms, Molecules, Clusters and Surfaces (MPS2010) held at IMRAM, Tohoku University, Sendai, **Japan** (September 4-7, 2010)

20. (e, 2e) processes on Ne, Ar and Xe targets
International Workshop on Electronic Spectroscopy for Gas-phase Molecules and Solid Surfaces (IWES2009), Matsushima, Sendai, **Japan** (October 12-15, 2009)
21. Doubly symmetric (e, 2e) processes on sodium atom
Atomic Physics Gordon Research Conference (GRC), Tilton School, Tilton, NH, **USA** (June 28- July 3, 2009)
22. Effect of polarization potential and PCI in the (e, 2e) processes on alkali and alkali earth targets at low energies
3rd International workshop on Physics of EBITs and Advanced Light Sources (PEARL2009), Dublin City University, Dublin, **Ireland** (May 6-9, 2009)
23. (e, 2e) processes on alkali and alkali earth atoms: A comparative study of inner and outer shell ionization
6th International conference on Atomic and Molecular data and Their Applications (ICAMDATA2008), Institute of applied physics and computational mathematics, Beijing, **China** (October 27-31, 2008)
24. TDCS for inner-shell (e, 2e) processes on alkali and alkali earth atoms Na, K, Be, Mg and Ca
40th EGAS conference 2008, Graz University of technology, Graz, Austria
25. Electron impact single ionization of Na and K atoms
Gordon Research Conference on Time-Dependent Density-Functional Theory, Colby College, Waterville, Maine, **USA** (July 15-20, 2007)
26. Triple differential cross section data of (e, 2e) processes on Be, Mg and Ca atoms
5th International conference on atomic and molecular data and their applications (ICAMDATA), Meudon, **France** (October 15-19, 2006)
27. Interference effect in the relativistic inner shell ionization of atoms by electron impact
Joint meeting of 14th Toki Conference and ICAMDATA2004, National Institute for Fusion Science, Toki, **Japan** (October 5-8, 2004)
28. Up-Down asymmetry in the relativistic (e, 2e) process for K-shell ionization of atoms
XXIII International Conference on Photonic, Electronic and Atomic Collisions (ICPEAC-2003), Stockholm University, Stockholm, **Sweden** (July, 23-29, 2003)
29. Electron impact double ionization cross sections of He atom in coplanar constant θ_{12} and out of plane constant ϕ_{12} modes
XXIII International Conference on Photonic, Electronic and Atomic Collisions (ICPEAC-2003), Stockholm University, Stockholm, **Sweden** (July, 23-29, 2003)

30. Electron dichroism in the relativistic (e, 2e) process for K-shell ionization of atoms
XXIII International Conference on Photonic, Electronic and Atomic Collisions (ICPEAC-2003), Stockholm University, Stockholm, **Sweden** (July, 23-29, 2003).
31. Longitudinal spin asymmetry in the relativistic (e, 2e) processes for atoms in non-coplanar geometry
XV National Conference on Atomic and Molecular Physics (NCAMPXV) held at Physical Research Laboratory (PRL), Ahmedabd (December 20-23, 2004)
32. Triple differential cross section in (e, 2e) processes for Be, Mg and Ca atoms
XV National Conference on Atomic and Molecular Physics (NCAMPXV) held at Physical Research Laboratory (PRL), Ahmedabd (December 20-23, 2004)
33. Second order effect on the quasi-binary incident electron-centre of mass collision in (e, 3e) process on He like ions
XV National Conference on Atomic and Molecular Physics (NCAMPXV) held at Physical Research Laboratory (PRL), Ahmedabd (December 20-23, 2004)
34. Triple differential cross section in (e, 2e) processes on Ca atom
Conference on Atomic and Molecular Physics" held at BRA Bihar University, Muzaffarpur (December 3-5, 2003).
35. Right-Left asymmetry in the relativistic (e, 2e) process for K-shell ionization of atoms
Conference on Atomic and Molecular Physics" held at BRA Bihar University, Muzaffarpur (December 3-5, 2003).
36. Electron impact single and double ionization of He like ions
XIV National Conference on Atomic and Molecular Physics held at Viswa Bharti University, Santiniketan (28th Jan – 1st Feb. 2003)
37. Spin asymmetry in (e, 2e) processes on Li, Be⁺, B⁺² and C⁺³ targets by transversely polarized electrons
XIV National Conference on Atomic and Molecular Physics held at Viswa Bharti University, Santiniketan (28th Jan – 1st Feb. 2003)
38. Inner Shell ionization of Ne, Ar and Xe atoms
International conference on "*Current Developments in Atomic, Molecular and Chemical Physics (CDAMCP-2002)*" held at University of Delhi, Delhi (March 20-22, 2002)

39. Triple differential cross section and spin asymmetry in (e, 2e) processes on He like ions
International conference on “*Current Developments in Atomic, Molecular and Chemical Physics (CDAMCP-2002)*” held at University of Delhi, Delhi (March 20-22, 2002)
40. Calculation of (e, 2e) triple differential cross section of He, Ne, Ar and Xe atoms in Murray Geometry
XIII National Conference on Atomic and Molecular Physics held at IACS, Colkata, January 16-20, 2001
41. Electron Dichroism in Relativistic (e, 2e) Process on Atoms
National Symposium on Atomic Physics at the Frontiers (APF 2000), 13-15 April, 2000, Roorkee, India
42. Electron impact ionization of atoms
State level technical paper presentation, Vidya Bhawan Society, Udaipur

E. Invited Talks / Oral Presentations

1. Delivered a talk entitled “Role of Projectile Charge in the Single Ionization Cross Sections of Atomic and Molecular Targets” in the International Conference on Atomic, Molecular, Optical and Nano Physics with Applications, Delhi Technological University (**DTU**), New Delhi (Dec. 18-20, 2019).
2. Delivered a talk entitled “Electron induced ionization cross sections of atoms, ions and molecules relevant to plasma applications” in the 8th topical conference of the Indian Society of Atomic and Molecular Physics (ISAMP) (TC-2020), **IIT Roorkee** (March 03-05, 2020).
3. Delivered oral presentation entitled “Electron impact ionization cross sections of atoms and ions relevant for plasma applications” in International Conference on Atomic and Molecular Collisions, Udaipur, India (Dec. 10-12, 2018)
4. Delivered a talk entitled “Ionization cross sections of atoms, ions and molecules in distorted wave formalism” in the research seminar at Institute of Multidisciplinary Research for Advanced Materials (IMRAM), Tohoku University, Sendai, **Japan** (April 02, 2018).
5. Delivered a talk entitled “Electron and positron impact ionization cross sections of atoms, ions and molecules” in the workshop “Research frontier on atomic elementary processes in peripheral plasmas”, NIFS, Toki, **Japan** (February 21, 2018).

6. Delivered a talk entitled “Electron impact ionization cross sections of beryllium and tungsten atoms” at Workshop on Atomic and Molecular Processes in Plasmas, NIFS, Toki, **Japan** (December 20-22, 2017).
7. Delivered a talk entitled “Coincidence study of electron impact ionization of atoms, ions and molecules” in the atomic and molecular physics group, Sophia University, Tokyo, **Japan** (September 09, 2017).
8. Delivered invited talk in the International Topical Conference on Charged Particle Collisions and Electronic Processes in Atoms, Molecules and Materials (q-PaCE 2016), ISM, **Dhanbad**, India during January 9-11, 2016
9. Delivered special report invited talk entitled “Calculation of FDCS for the low and intermediate energy ionization of water molecules” in the XIX International Conference on Photonic, Electronic and Atomic Collisions held at Toledo, **Spain** during July 22-28, 2015.
10. Delivered invited talk entitled “Low and intermediate energy electron impact ionization of hydrogen and water molecules” in the 11th Asian International Seminar on Atomic and Molecular Physics (AISAMP11) held at IMRAM, Tohoku University, Sendai, **Japan** during October 06-10, 2014
11. Delivered a talk entitled “Electron impact ionization of hydrogen and water molecules” in the atomic and molecular science seminar at Sophia University, Tokyo, **Japan** on October 13, 2014.
12. Delivered a talk entitled “Electron impact ionization of molecules” in the research seminar at ISSP, Tokyo University, **Japan** on October 14, 2014.
13. Delivered a talk entitled “Charged particle impact ionization of atoms and molecules” in the atomic and molecular science seminar at Sophia University, Tokyo, **Japan** on July 16, 2013.
14. Delivered a talk entitled “Second order Born effects in the perpendicular plane ionization of Xe (5p) atoms” in 12th Asia Pacific Physics Conference (APPC12), Chiba, **Japan** on July 17, 2013.
15. Delivered a talk entitled “Electron impact single ionization of atoms and molecules” in the research seminar at ISSP, Tokyo University, **Japan** on July 18, 2013.
16. Delivered a talk entitled “Calculation of TDCS (Triply Differential Cross Sections) for the electron impact single ionization of xenon atoms” in the atomic and molecular science seminar at Sophia University, Tokyo, **Japan** on October 22, 2012.

17. Delivered a talk in “The Ghanshyam Purohit Japan-India Workshop on Atomic, Molecular Physics, and Beyond” held at Sophia University, Tokyo, **Japan** on 28th January 2012.
18. Delivered a talk entitled “*Low-energy (e , $2e$) processes on atoms*” at RIKEN, Wako, Saitama, **Japan** on 19th January 2012.
19. Delivered a talk entitled “Electron Impact Ionization of Atoms” in the colloquium of Department of Materials and Life Science at Sophia University, Tokyo, **Japan** on October 18, 2011.
20. Delivered a talk entitled “Calculation of TDCS for the electron impact ionization of Mg atoms” in the MPS2010 conference held at Tohoku University, Sendai, **Japan** in September 4-7, 2010.

Session Chair

1. Chaired a session in XIII Asian International Seminar on Atomic and Molecular Physics (AISAMP13) (Mumbai, December 03-08, 2018).
2. Chaired a session in the International Conference on Atomic, Molecular, Optical and Nano Physics with Applications, Delhi Technological University (**DTU**), New Delhi (Dec. 18-20, 2019).
3. Chaired a session in Rajasthan Science Congress, MLSU, Udaipur (October 14-16, 2019).

Ph. D. Guided: 03

Ph. D. Students enrolled: 02

Research Projects

1. **Principal Investigator (PI)** of the **SERB CRG** Project entitled “*Dynamical electron and positron impact ionization study on molecules of environmental and biological significance*, viz. N_2 , CO_2 , H_2O and Pyrimidine” Grant allocated: Rs. 22.7 lacs (On going).
2. **Co-PI** in the RUSA 2 project entitled “*Development and optimization of energy conversion and storage materials based on perovskites, ferrites and grapheme*” Grant allocated: Rs. **95.5 lacs**. (On going).
3. Research project entitled “*Calculation of ($e,2e$) cross sections for beryllium and its hydride in low temperature plasmas*” completed under **JSPS** Long Term Fellowship Term in National Institute for Fusion Science, Toki, **Japan**, Research Grant: JPY 150,000 (June 2017 – April 2018).

Research Seminars Delivered

1. Delivered a seminar entitled “Coincidence study of electron impact ionization of atoms, ions and molecules” in the atomic and molecular physics group, Sophia University, Tokyo, Japan (September 09, 2017).
2. Delivered a seminar entitled “Study of electron and positron impact ionization cross sections of atoms and ions” in Tokyo University of Science, Tokyo, Japan (March 26, 2018).
3. Delivered a seminar entitled “A coincidence study of charged particle induced ionization cross sections” in Institute of Solid State Physics (ISSP), University of Tokyo, Kashiwa, Chiba, Japan (March 27, 2018).
4. Delivered a seminar entitled “Study of electron and positron induced ionization cross sections of atomic, ionic and molecular targets” in the atomic and molecular physics group, Sophia University, Tokyo, Japan (March 28, 2018).
5. Delivered a seminar entitled “Charged particle impact ionization cross sections of atoms, ions and molecules” in the department of physics colloquium at Toho University, Chiba, Japan (April 11, 2018).
6. Delivered a seminar entitled “Electron impact ionization cross sections of atoms, ions and molecules relevant to plasma applications” in the group meeting of Fusion systems research division, Department of helical plasma research, National Institute for Fusion Science, Toki, Japan (April 23, 2018).

Research Achievements/ Awards:

Post-Doctoral work as JSPS Long Term Invitation Fellow

Worked as JSPS Long Term Invitation Fellow (FY 2017) on the project entitled “Calculation of (e, 2e) cross sections for beryllium and its hydride in low temperature plasmas”. Host Professor: Dr. Daiji Kato, National Institute of Fusion Science (NIFS), Toki, Japan (June 26, 2017 – April 25, 2018).

Post-Doctoral Research and Visiting Professorship

Worked at Sophia University, Tokyo, Japan for the period September 30, 2011 – February 03, 2012 in the Atomic and Molecular Physics Group of Prof. Yoshiro AZUMA, department of materials and life sciences, Faculty of Science and Technology, Sophia University.

Visiting Scientist:

- Institute of Theoretical Atomic, Molecular and Optical Physics (ITAMP), Harvard-Smithsonian Center for Astrophysics, Harvard University, Cambridge, MA, USA
- Max-Planck-Institut für Kernphysik, Heidelberg, Germany
- Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy

International Research Collaborations

- Prof. Yoshiro AZUMA, Department of Materials and Life Sciences, Faculty of Science and Engineering, Sophia University, Tokyo, Japan – *Ion impact processes on atoms and molecules*
- Prof. Fumihiko Koike, Emeritus Professor, Atomic and Molecular Physics Group, Faculty of Science and Engineering, Sophia University, Tokyo, Japan – *Atomic Structure Calculations*
- Priv. Dotz. Dr. Alexander Dorn, Max Planck Institute for Nuclear Science, Heidelberg, Germany – *Double ionization processes of atoms and molecules*
- Prof. Christophe Champion, Université Bordeaux 1, CNRS/IN2P3 Centre d'Études Nucléaires de Bordeaux Gradignan (CENBG), France – Electron track structure modeling for radiation damage in biological tissues.
- Dr. Daiji Kato, National Institute for Fusion Science, Toki, Japan

Guest Scientist visits

- Visited Max-Planck-Institut für Kernphysik, Heidelberg, Germany as a guest scientist from July 29 - August 08, 2016.
- Visited College of Science and Technology, Nihon University, Chiba, Japan from October 10-11, 2014.
- Visited Max-Planck-Institut für Kernphysik, Heidelberg, Germany from July 19-26, 2014.
- Visited Max-Planck-Institut für Kernphysik, Heidelberg, Germany from June 22-28, 2011.
- Visited Max-Planck-Institut für Kernphysik, Heidelberg, Germany from June 17-29, 2010.
- Visited Institute of Theoretical Atomic, Molecular and Optical Physics, Harvard-Smithsonian Centre for Astrophysics, Harvard University, Cambridge, USA from June 11-16, 2010.
- Visited Kitasato University, Sagamihara, Japan from September 08-10, 2010.
- Visited Kitasato University, Sagamihara, Japan from October 10-11, 2009.

Research collaboration visits

- Visited Prof. Yoshiro AZUMA, Sophia University, Tokyo, Japan on October 12-13, 2014 and presented research seminar entitled “Electron Impact Ionization of Hydrogen and Water Molecules” in the atomic and molecular physics group of faculty of materials and life sciences, Sophia University, Tokyo, Japan on October 13, 2014.

- Visited Dr. Jiro Itatani, ISSP, Tokyo University, Chiba, Japan on October 14, 2014 and presented research seminar entitled “Study of electron and positron impact collision dynamics in hydrogen and water molecules”
- Visited Sophia University, Tokyo for scientific interaction with Prof. Yoshiro AZUMA and his group from October 20 – 22, 2012.
- Visited Kitasato University, Sagamihara and Tokyo Institute of Technology, Kanagawa, Japan for scientific interaction with Prof. Fumihiko Koike and Dr. Toru Kawamura on October 18 – 19, 2012.

Other Achievements

- Received *Faculty Prime Mover Award* 2009 from Sir Padampat Singhanian University, Udaipur
- Referee of British Institute of Physics, Elsevier, IEEE, Hindawi journals.
- Selected for the best teacher award 2009 by Dainik Bhaskar Group, Udaipur.
- Foreign travel grants awarded by Department of Science and Technology (New Delhi), INSA (New Delhi), CSIR (New Delhi), CCSTDS (Chennai), Stockholm University (Sweden), National Institute for Fusion Science (Japan), Paris Observatory (France), Cambridge University (UK), Graz university of technology, Austria, Centre for applied physics and computational mathematics, Beijing, china, Dublin City University, Dublin, Ireland, Kitasato University, Japan, IMRAM, Tohoku University, Japan, Gordon Research Conferences, USA .
- Received Nature Publishing Group Award to present research work at Gordon Research Conference on Multiphoton processes, 2010 held at Tilton School, NH, USA.
- Received Nature Publishing Group Award to present research work at Gordon Research Conference on Time Dependent Density-Functional Theory, 2007 held at Colby College, Waterville, Maine, USA.
- Junior Research fellowship and Senior Research Fellowship awarded by Council of Scientific and Industrial Research (CSIR), New Delhi after being selected from the National level CSIR-UGC-NET-JRF Exam.
- Gold Medal awarded by M. L. S. University, Udaipur for getting first in the M. Sc., Physics exam. 1997.

Administrative / Academic responsibilities

- Associate Dean – Research,
- Executive head – MSME, Govt. of India, Business Incubator
- Chairman – Central Grade Moderation Committee
- Head – Department of Physics
- Member – Academic council
- Member – Board of studies
- Member – Research Advisory Council (RAC)

(all above at SPSU, Udaipur)

Events Organized

- Organized three DST INSPIRE Science Camps of five days duration each at Sir Padampat Singhania University (SPSU), Udaipur
- Organized guest lectures of Japanese collaborators in Department of Physics, MLSU, Udaipur.
- Organized National Science Day (NSD) 2019 events in University College of Science, MLSU, Udaipur

Membership of the learned bodies:

- Indian Society of Atomic and Molecular Physics (ISAMP)
- Indian Physics Association (IPA)
- Indian Association of Physics Teachers (IAPT)
- Indian Physical Society (IPS)
- Indian society of Technical Education (ISTE)