Vikas Tayal
Assistant Professor
Department of Physics
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Date of Joining: 31/10/2019

Areas of Interest

Atomic and Molecular Collision Physics, Atomic Structure Calculations, Relativistic and Semi-Relativistic Structure Calculations of Atoms and Ions.

Professional Background

From	Period	Position	Organisation
31-10-2019	Ongoing	Assistant Professor	H.V.M. (PG) College Raisi, Haridwar
19-03-2018	1.8 years	Associate Professor	Swami Vivekanand Subharti University, Meerut
25-07-2013	5 years	Associate Professor	IIMT college of Engg, Greater Noida
05-02-2009	4.5 years	Assistant Professor and then Associate Professor	Dronacharya college of Engg, Greater Noida
12-07-2008	0.9 year	Assistant Professor	Echelon Institute of Technology, Faridabad

Educational Details:

Degree	Subject	College/University	Year
Ph. D	Theoretical Atomic Physics	S.D.(PG) College, Muzaffarnagar (U.P.) (C.C.S. University, Meerut)	2008
M.Sc.	Physics	S.D.(PG) College, Muzaffarnagar (U.P.) (C.C.S. University, Meerut)	2000
B.Sc.	Physics, Chemistry,Mathematics	D. A. V. (PG)COLLEGE, , Muzaffarnagar (U.P.) (C.C.S. University, Meerut)	1998

Honors And Awards

- Awarded **IUPAP** grant (in terms of full wavier of registration fee) by conference organizer to participate in the 32nd International Conference on Photonic, Electronic and Atomic Collisions (ViCPEAC 2021) held at Ottawa, Canada, from July 20, 2021 – July 23, 2021.

- Travel grant sanctioned by the **Department of Science & Technology** (DST) vide letter No. **SR/ITS/1816/2011-2012** dated June 14, 2011 for the participation and presented one research paper in "27th International Conference on Photonic, Electronic and Atomic Collisions" (XXVII-ICPEAC) held from July 27 to August 2, 2011 at Queen's University of Belfast, **Northern Ireland, United Kingdom.**

- Partial financial support also sanctioned by the **INSA** (Indian National Science Academy, New Delhi) for presenting one research paper in "27th International Conference on Photonic, Electronic and Atomic Collisions" (XXVII-ICPEAC) held from July 27 to August 2, 2011 at Queen's University of Belfast, **Northern Ireland, United Kingdom.**

Participation in Seminars/Conferences

Name	Place	Date
Spatially Resolved Spectroscopy with ELTs	University of Oxford, **London** (**UK**),	Sep 20-24,2021
32nd International Conference on Photonic, Electronic and Atomic Collisions" (ViCPEAC 2021)	**Ottawa, Canada**	July 20-23, 2021
27th International Conference on Photonic, Electronic and Atomic Collisions (XXVII ICPEAC-2011)	Queen's University Belfast, Northern Ireland (**United Kingdom**)	27 July - 2 August, 2011
2nd DAE-BRNS Symposium on Atomic, Molecular and Optical Physics"(XVIIIth*National Conference on Atomic and Molecular Physics*) ,	Karnata University (Dharwad) **Karnatak**	February 22-25, 2011
26th International Conference on Photonic, Electronic, and Atomic Collisions (XXVI -ICPEAC)	Kalamazoo, Michigan, **USA**	July 22-28, 2009
DAE-BRNS Symposium on Atomic, Molecular and Optical Physics	IUAC,**New Delhi**	February 10-13, 2009
Topical Conference on Atomic and Molecular Physics (TC2008)	Vallabh Vidyanagar, **Gujarat**	January 3-5, 2008
25th International Conference on Photonic, Electronic, and Atomic Collisions (XXV ICPEAC)	Freiburg, **Germany**	July 25-31, 2007
XVI National Conference on Atomic and Molecular Physics(NCAMP)	TIFR,**Mumbai** (India),	January 08-11, 2007
2nd International Conference on Current Developments in Atomic, Molecular and Optical Physics with Applications (CDAMOP)	**New Delhi**	March 21-23, 2006

37th Conference of the European Group for Atomic Systems (EGAS)	Dublin City University, **Dublin** (Ireland)	August 3rd – 6th, 2005
XV National Conference on Atomic and Molecular Physics (NCAMP)"	P.R.L. Navrangpura, **Ahmedabad** (India),	December 20-23, 2004

Participation in Webinar/Workshop

1. Participated in Virtual Symposium on Photonics: State of Art, on the occasion of the International Day of Light was held at PIET, **Panipat**, on May 16, 2020.

2. Participated in International webinar on "COVID -19 Pandemic: Emerging Challenges & Perspectives in E-learning" organized by HVM (PG) College, Raisi, Haridwar, on May 29, 2020.

3. Participated in two days multi-subject international e-seminar on "Ganga in India: Multi-Dimensional Approach" was held at National Indian Institution & K.A. (PG) College, Kasganj, from June 1-2, 2020.

4. Participated in webinar "India: Spanish Flu to Covid-19", organized by IQAC and Department of Science, S D College, Muzaffarnagar on June 09, 2020.

5. Participated in workshop on "Regional Sensitiztion and Training Workshop of Water Quality Management for Educational Institutions" Organized jointly by PMU, UCOST & UJS Dehradun was held at HVM (PG) College, Raisi (Haridwar), March 9th, 2021.

6. Participated in Virtual Symposium on "Recent Technological Advancement in Wide/Ultra-wide Band Gap Semiconductor Materials, Devices and Applications": A Step towards Atma Nirbhar Bharat was held at BITS, Pilani on 10th April, 2021.

7. Completed **One-Week Faculty Development Programme** on "Open Source Tools For Research" organized by Teaching Learning Centre, Ramanujan College, University of Delhi under the aegis of Ministry of Education Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching from 03-09 April, 2021.

8. Participated as a "Coordinator" in One day National webinar on "Women in 21st Century Indian Literature: Contemporary Issues & Perspectives" organized by HVM (PG) College, Raisi, Haridwar, on May 24, 2021.

9. Participated in workshop on "ECOSYSTEM RESTORATION" Organized by Department of Botany, HVM (PG) College, Raisi (Haridwar), on June 5th, 2021.

10. Participated in Two Days Workshop on "Implementation of NEP-2020 in the Session 2021-2022 Organized by Chaudhary Charan Singh University, Meerut & Internal Quality Assurance Cell, Raghunath Girls' Post Graduate College, Meerut was held from June 24 - June 25, 2021.

11. Participated in webinar "National Education Policy-2020 a Forward Step Towards Public Private Partnership in Higher Education", organized by IQAC and Department of Science, S D College Muzaffarnagar, on July 10, 2021.

12. Participated in Two Days National Conference on "Advances in Theoretical Physics, Material and Atmospheric Sciences" was held at Govt. P. G. College Dakpatthar, Dehradun, Uttarakhand from July16-17 2021.

13. Completed **One-Month Online Induction Training/Orientation Programme** for Faculty in Universities/Colleges/Institutions of Higher Education Organized by Teaching Learning Centre, Ramanujan College, University of Delhi under the aegis of Ministry of Education Pandit Madan Mohan Malaviya National Mission on teachers and teaching from 19 June-18 July, 2021

14. Participated in webinar "Anchrom Webinar on HPTLC: Techniques and Herbal Application", was held at Maharshi Dayanand University, Rohtak, on July 23, 2021.

Memberships

- Indian Society of Atomic and Molecular Physics (ISAMP), Life member
- Neutron Scattering society of india, Mumbai (Life member)

Teaching Engagements

Title	Class Name	Semester
Thermal Physics and Statistical Mechanics	BSc	Autumn
Mathematical Physics	MSc	Autumn
Statistical Mechanics	MSc	Spring
Partical Physics	MSc	Autumn
Laser and Fiber Optics	MSc	Spring

Refereed Journal Papers

1. G.P. Gupta, **Vikas Tayal** and A.Z. Msezane, "Fine-Structure Energy Levels and Radiative Rates in Si-Like Chlorine" *Indian Journal of Physics*, **86**(1), 1-8(2012)

2. **Vikas Tayal** and G. P. Gupta, "Excitation Energies and Radiative Rates in Mg-Like Copper" *Physica Scripta* **80**, 055301 (2009)

3. **Vikas Tayal**, G. P. Gupta and A.N. Tripathi, "Energy Levels, Oscillator Strengths and Lifetimes in Ar V" *Indian Journal of Physics* **83** (9), 1271-1288 (2009)

4. **Vikas Tayal** and G. P. Gupta, "Fine-Structure Energy Levels, Oscillator Strengths and Lifetimes in Mg-Like Chromium" *European Physics Journal* D**44**, 449-457 (2007)

5. **Vikas Tayal** and G. P. Gupta, "Energy Levels, Oscillator Strengths and Lifetimes in Si-Like Ca VII" *Physica Scripta* **75**, 331-339 (2007)

6. K.M. Aggarwal, **Vikas Tayal,** G.P. Gupta and F.P. Keenan, "Energy Levels and Radiative Rates for Transitions in Mg-Like Iron, Cobalt and Nickel" *Atomic Data and Nuclear Data Tables* **93**, 615-710 (2007)

7. **Vikas Tayal** and G.P. Gupta "Fine-Structure Energy Levels and Lifetimes in Br XXIV" *Journal of Physics B: At. Mol. Opt. Phys*. **38**, 4135-4144 (2005)

8. **Vikas Tayal**, G.P. Gupta and A.N. Tripathi, "Calculated Energy Levels, Oscillator Strengths and Lifetimes in Mg-Like Argon" *Indian Journal of Physics* **79**(11), 1243-1251 (2005)

9. **Vikas Tayal**, G.P. Gupta and A.Z. Msezane, "Excitation Energies, Oscillator Strengths and Lifetimes in Ca IX" *Physica Scripta* **71**, 627-637 (2005)

PAPERS PRESENTED IN CONFERENCES

In International Conferences

1 **Vikas Tayal** *"*Fine-Structure Energy levels, oscillator strengths and lifetimes in Ca VII" in Spatially Resolved Spectroscopy with ELTs held at Department of Physics, University of Oxford, **London** (**United Kingdom**), from Sep 20, 2021 – Sep 24, 2021

2 **Vikas Tayal** *"*Correlation Effects on Fine-Structure Energy Levels, Oscillator Strengths and Lifetimes in Cr XIII" in "32nd International Conference on Photonic, Electronic and Atomic Collisions" ViCPEAC 2021) held **at Ottawa, Canada**, from July 20, 2021 – July 23, 2021

3 **Vikas Tayal**, G.P. Gupta and A.Z. Msezane, "Fine-Structure Energy Levels, Radiative Rates and Lifetimes in Fe XIII" Presented in 27th International Conference on Photonic, Electronic and Atomic Collisions (XXVII-ICPEAC-2011) was held at Queen's University Belfast, Northern Ireland (**United Kingdom**), from 27 July - 2 August 2011

4 **Vikas Tayal,** G.P. Gupta and M.K. Sharma, "Correlation Effects in Fine-Structure Energy Levels, Oscillator Strengths in Ca VI" Presented in *26th International Conference on Photonic, Electronic, and Atomic Collisions* (XXVI ICPEAC) was held at Kalamazoo, Michigan, **USA,** from July 22-28, 2009 Journal of Physics: Conference Series **194** (2009) 042028, doi:10.1088/17426596/194/4/042028

5 G.P. Gupta, **Vikas Tayal** and A.Z. Msezane, "Energy Levels, Oscillator Strengths and Lifetimes in Ar V" Presented in *25th International Conference on Photonic, Electronic, and Atomic Collisions* (XXV ICPEAC) was held at Freiburg, **Germany**, from July 25-31, 2007

6 **Vikas Tayal** and G.P. Gupta, "Excitation Energies and Radiative Rates in Mg-Like Copper" Presented in *25th International Conference on Photonic, Electronic, and Atomic Collisions* (XXV ICPEAC)" was held at Freiburg, **Germany**, from July 25-31, 2007

7 **Vikas Tayal** and G. P. Gupta, "Large Scale CIV3 Calculations of Fine-Structure Energy Levels and Lifetimes in Mg-Like Iron, Cobalt and Nickel" Presented in *37th Conference of the European Group*

for Atomic Systems (EGAS) was held at Dublin City University, **Dublin** (Ireland), August 3rd – 6th, 2005

In National Conferences

8. **Vikas Tayal** and G.P. Gupta, "Fine-Structure Energy Levels, Oscillator Strengths and Lifetimes in Si-Like Calcium" Presented in *2nd DAE-BRNS Symposium on Atomic, Molecular and Optical Physics*" (XVIIIth *National Conference on Atomic and Molecular Physics*) was held at Karnata University (Dharwad) **Karnatak**, from February 22-25, 2011

9. **Vikas Tayal** and G.P. Gupta, "Fine-Structure Energy Levels, Oscillator Strengths and Lifetimes in Si-Like Argon" Presented in *DAE-BRNS Symposium on Atomic, Molecular and Optical Physics* was held at Inter University Accelerator Centre, **New Delhi**, from February 10-13, 2009

10. **Vikas Tayal** and G.P. Gupta, "Fine-Structure Energy Levels, Oscillator Strengths and Lifetimes in Cu XVIII" Presented in *Topical Conference on Atomic and Molecular Physics* (TC2008) was held at Vallabh Vidyanagar, **Gujarat** (India), from January 3-5, 2008

11. **Vikas Tayal** and G.P. Gupta, "Energy Levels, Oscillator Strengths and Lifetimes in Si-Like Ca VII" Presented in *XVI National Conference on Atomic and Molecular Physics* (NCAMP) was held at Tata Institute of Fundamental Research, **Mumbai** (India), from Jan. 08-11, 2007

12. **Vikas Tayal** and G.P. Gupta, "Fine-Structure Energy Levels and Lifetimes in Fe XV, Co XVI and Ni XVII" Presented in *2nd International Conference on Current Developments in Atomic, Molecular and Optical Physics with Applications* (CDAMOP) was held at **New Delhi** (India), from March 21-23, 2006

13. **VikasTayal** and G.P. Gupta, "Excitation Energies, Oscillator Strengths and Lifetimes in Mg-Like Calcium" Presented in *XV National Conference on Atomic and Molecular Physics* (NCAMP) was held at P.R.L. Navrangpura, **Ahmedabad** (India), from December 20-23, 2004

National International Collaboration

Name	Address
Dr. G.P. Gupta	Associate Professor, Department of Physics S. D. (PG) College, Muzaffarnagar (U.P.) INDIA E✉ID: g_p_gupta1@yahoo.co.in
Professor A.N. Tripathi	Emeritus Professor, Department of Physics, Indian Institute of Technology (IIT) Roorkee (Uttarakhand) INDIA E-mail: awadhfph@iitr.ernet.in
Dr. K.M. Aggarwal	Astrophysics Research Centre, School of Mathematics and Physics Queen's University Belfast, BELFAST BT7 1NN (Northern Ireland) U.K. E-mail: K.Aggarwal@qub.ac.uk
Professor A.Z. Msezane	Department of Physics and Centre for Theoretical Studies of Physical Systems ClarkAtlantaUniversity, Atlanta, Georgia-30314, USA

Research Skills

Currently, I am performing “Large Scale Calculations on Atomic Structure & Electron-Ion Collision Processes” and using very well established “Configuration-Interaction (CIV3)” computer code of Professor Alan Hibbert, Queen’s University of Belfast, Northern Ireland (UK) to generate extensive wave functions in both LS as well as intermediate coupling scheme. These wave functions are used to calculate the energy levels, oscillator strengths, transition probabilities and lifetimes of the ions. The calculated atomic data such as energy levels, oscillator strengths and the lifetimes are required to interpret the observations now becoming available from a number of missions, recently, launched by National Aeronautics and Space Administration (NASA) and have wide applications in many astrophysical studies. These are useful for estimating the energy loss through impurity ions in fusion plasmas, and for diagnostic and modeling of the plasmas.

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