

Prof Meetu Luthra
Department of Physics

CURRICULUM VITAE

Profile Working in Bhaskaracharya college of Applied Sciences as permanent faculty in the department of Physics since August 1999. Worked as adhoc in Kalindi college for 1.5 years (from November 1997 to April 1999). Pursued Ph.D under the supervision of Prof. Daksh Lohiya and Prof. S.R. Chowdhary from Department of Physics and Astrophysics, University of Delhi. Pursued postdoctoral research work with Prof. Bhanu Pratap Das in Indian Institute of Astrophysics, Bangalore while on study leave.

Education

Ph.D

Department of Physics and Astrophysics

University of Delhi

Thesis Title - Aspects of Field theory and Early Universe
Cosmology

Supervisors - Prof. Daksh Lohiya, Prof. S. R. Choudhry

M.Sc. Physics

Hansraj College

University of Delhi

Percentage: 82.8%

Position : **1st in College and 2nd in University**

B.Sc. Physics

Hansraj College

University of Delhi

Percentage: 88.4 %

Position : **1st In College and 2nd in university**

Qualified the joint CSIR-UGC NET.

Qualified GATE-96 with a percentile score of 88.74.

Research Publications

1. **Luthra M.**, Bharadvaja, A., Prashant, A. , Baluja, K. L. (2024) “Electron scattering from Pyrimidine upto 5 Kev “ Brazilian Journal of Physics, 54 (4), 1-16.
<https://doi.org/10.1007/s13538-024-01484-0>
2. Prashant, A., **Luthra, M.**, Goswami, K., Bharadvaja, A., & Baluja, K. L. (2023). “Positron Scattering from Pyrimidine.” **Atoms**,11(3),55.
<https://doi.org/10.3390/atoms11030055>
3. **Luthra, M.**, Prashant, A., Goswami K., Bharadvaja, A. and Baluja, K.L. (2023) "Electron-impact partial ionisation cross-sections of ethanol." **Pramana** 97, no.3,120.
<https://doi.org/10.1007/s12043-023-02603-3>
4. **Luthra, M.**, Goswami, K., Arora, A. K., Bharadvaja, A., & Baluja, K. L. (2022). “Mass Spectrometry-Based Approach to compute Electron-Impact Partial Ionization Cross-sections of Methane, Water and Nitromethane from threshold to 5 keV.” **Atoms**,10(3),74.
<https://doi.org/10.3390/atoms10030074>
5. Goswami, K., **Luthra, M.**, Bharadvaja, A., & Baluja, K. L. (2022). “Partial Ionization Cross Sections of Tungsten Hexafluoride Due to Electron Impact.” **Atoms**,10(4),101.
<https://doi.org/10.3390/atoms10040101>
6. **Luthra, M.**, Garkoti, P., Goswami, K., Bharadvaja, A., & Baluja, K. L. (2022). “Electron impact cross-sections of tetraethyl silicate.” **Plasma Sources Science and Technology**,31(9),095013.
<https://doi.org/10.1088/1361-6595/ac8289>
7. Garkoti, P., **Luthra, M.**, Goswami, K., Bharadvaja, A., & Baluja, K. L. (2022). “The binary-encounter-Bethe model

for computation of singly differential cross sections due to-electron-impact-ionization.” *Atoms*,10(2),60
“<https://doi.org/10.3390/atoms10020060>

8. Goswami, K., **Luthra, M.**, Arora, A.K, Bharadwaja,A. and Baluja, K.L.(2022). Electron impact partial ionization cross sections of 1-butanol. *The European Physical Journal D*,76,97.
<https://doi.org/10.1140/epjd/s10053-022-00425-3>
9. Goswami, K., **Luthra, M.**, Arora, A.K, Bharadwaja,A. and Baluja, K.L.(2022). Electron impact cross-sections of acetylene up to 5 kev. *The European Physical Journal D*,76,94.
<https://doi.org/10.1140/epjd/s10053-022-00420-8>
10. Mishra, T., Pai, V.R., Ramanan, S., **Luthra, S.M.**, Das .P.B. (2009) “Supersolid and solitonic phases in one-dimensional extended Bose-Hubbard model.” *Physical Review A* 80,043614.
<https://doi.org/10.1103/PhysRevA.80.043614>
11. Ramanan, S., Mishra, T., **Luthra, S.M.**, Pai, V.R., Das P.B. (2009) “Signatures of the superfluid-to-Mott insulator transition in cold bosonic atoms in a one-dimensional optical lattice.” *Physical Review A*, 79,013625.
<https://doi.org/10.1103/PhysRevA.79.013625>
12. **Luthra, S.M.**, Mishra T., Pai V.R., Das, P.B. (2008) “Phase diagram of a bosonic ladder with two coupled chains” *Physical Review B*, 78,165104.
<https://doi.org/10.1103/PhysRevB.78.165104>
13. Dev, A., **Sethi, M.**, Lohiya, D. (2001) “Linear Coasting in Cosmology and SNe1A”. *Physics Letters B* 504 ,207-212.
[https://doi.org/10.1016/S0370-2693\(01\)00292-1](https://doi.org/10.1016/S0370-2693(01)00292-1)
14. **Sethi. M.**, Lohiya. D. (2000) “A strategy for a problem free Einstein-Hilbert Action along with a problem free toy Cosmology. “*Gravitation and Cosmology*, 6,185-193.

15. **Sethi, M.**, Batra, A., Lohiya, D. (1999) “Comment on observational Constraints on Power Law Cosmology” *Physical Review D* ,60,108301.
<https://doi.org/10.1103/PhysRevD.60.108301>
16. Lohiya D., **Sethi, M.** (1998) “A programme for a problem free cosmology within the frame work of a rich class of scalar - tensor theories.” *Classical and Quantum Gravity*,16, 1545-1563.
<https://doi.org/10.1088/0264-9381/16/5/306>

Book Chapter

- “Kalman filter: Data Modelling and Prediction” chapter 2, edited book “Advanced Mathematical applications in Data Science” Published by Bentham Science Publishers Pvt. Ltd. (2022)
- Contributed chapter on Physics practicals in the book “A Laboratory Manual: Innovation in Science Pursuit for Inspired Research” Bhaskaracharya College of Applied Sciences. (2010)

Conference Presentations

- “An Estimate of Dark matter and Hubble parameter using gravitational lensing” **Oral presentation** by my dissertation student in 2nd International Conference on “Advanced Functional Materials and Devices” (AFMD-2023) organised by IQAC & Department of Physics, ARSD College, University of Delhi (2023)
- “Significance of electron interactions in the development of energy efficient and eco-friendly combustible engines using ethanol as bio-fuels.” **Poster presentation** in international e-conference on Recent Advances in Chemical Sciences, health, environment, and society organized by department of Chemistry, Deshbandhu college. (2022)
- “An analysis of effective assessment and evaluation techniques at undergraduate level.” **Oral presentation** in Annual convention of Indian Association of Physics teachers (RC1). (2021)
- “Phase diagram of two-legged bosonic ladder” **Poster presentation** in 52nd DAE solid state physics symposium at University of Mysore, Mysore organised by Board of research in Nuclear Science, Department of Atomic Energy. (2007)
- “A profile of a problem free cosmology” **Oral presentation** by co-author in Inner space outer space conference in Fermilab. (1999)
- “An alternative approach to a problem free cosmology.” **Oral presentation** in XIII DAE symposium of High Energy Physics, held at Centre for advanced studies, Panjab University, Chandigarh. (1998)

Dissertations

- “Understanding gravitational lensing and its cosmological applications” Adreeja Goswami (2023).
- “Kalman filtering technique and it’s application in Physics” Arnob Goswami (2018)
- “An overview of standard cosmology and observational constraints on an alternative model.” Katyayini Sharma (2018)

Short term exercises/projects with students (under DBT)

- “SN2011fe- Calculation of cosmological parameters”. Paras Dheer. (2020-21).
- “Gravitational lensing as a tool to measure the dark matter” Adreeja Goswami (2021-22).
- “Parameter Estimation of Compact Binary Coalescences (CBCs) using Gravitational Wave Data” Abhishek Prashant (2021-22)
- Many other computational problems in quantum mechanics were undertaken with the students during the online classes.

**Invited
talks/Resource
person**

- Invited lecture in Aditi Mahavidyalaya organized by the Science society and Department of Education on the occasion of live streaming of the inauguration of semiconductors projects by the Honourable Prime minister (2024)
- Resource person for INSPIRE program organized in college (5th – 9th July 2010)
- Presented my work in the 4th Garuda partners meet organized by CDAC- Bangalore (November 2009)
- Presented my work in the Indian Institute of Astrophysics in-house meeting in (April 2009)
- Chaired one of the sessions in the Young Astronomers meet organized by Indian Institute of Astrophysics 2007 (YAM -97)

Courses taught

- Quantum Mechanics and its Applications
- Statistical Mechanics
- Waves and Oscillations
- Advanced Mathematical Physics Lab
- Quantum Mechanics Lab
- Statistical Mechanics Lab
- Electromagnetic Theory Lab
- Mechanics Lab
- **Dissertation**- 03 students of B.Sc. (Hons.) Physics 3rd year have done dissertation under my guidance.

