

About Faculty



Dr Renu Bala

Assistant Professor

Department of Physics

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Areas of Interest

- Condensed Matter Physics

| Educational Qualification | | | | |
|---------------------------|------|-------------------|---------|---------------------------------|
| Degree | Year | Dept/University | Percent | Medals/ Positions |
| Ph.D | 2014 | Panjab University | NA | NA |
| M.Sc (Hons) | 2009 | Panjab University | 77.55 | First division with distinction |
| B.Sc (N.M) | 2007 | Panjab University | 78 | First division |

| Professional Experience | | | |
|-------------------------|----------------|-------------|---------------------------|
| Designation | From | To | Organization |
| Assistant Professor | 14 August 2014 | 6 July 2015 | DAV University |
| Assistant Professor | 6 July 2015 | Till date | MCM DAV College for Women |

| Research Paper Publications | | | | |
|--|---------------------------|----------|------------------------------|---|
| Title | Journal | Refereed | Date and Year of Publication | Online Link |
| Exchange and correlation effects on density excitation spectra of metallic quantum wires at finite temperature | J. Phys : Condens. Matter | Yes | 2012 | https://iopscience.iop.org/article/10.1088/0953-8984/24/24/245302 |
| Spin polarized electrons in a metallic quantum wire | Eur. Phys. J. B | yes | 2014 | https://link.springer.com/article/10.1140/epjb/e2013-40567-3 |

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|---|-----------------|-----|-------------|---|
| Particle density and transition temperature of weakly interacting quantum gases | Eur. Phys | yes | 2015 | https://link.springer.com/article/10.1140/epjb/e2015-60365-1 |
| Study of weakly interacting trapped Bose Gas | Eur. Phys. J. B | yes | 2016 | https://link.springer.com/article/10.1140/epjb/e2016-70151-2 |
| Dependence of structure factor and correlation energy on width of electron wires | Eur. Phys. J. B | yes | 2018 | https://link.springer.com/article/10.1140/epjb/e2017-80530-8 |
| Conditions where random phase approximation becomes exact in the high-density limit | Phys. Rev. B | yes | 2018 | https://journals.aps.org/prb/abstract/10.1103/PhysRevB.97.155147 |
| Exact ground-state properties of one-dimensional electron gas at high density | Phys. Rev. B | yes | 2020 | https://journals.aps.org/prb/abstract/10.1103/PhysRevB.101.075130 |

| Books Published | | | |
|------------------------|------------------|--------------------|----------------------------|
| Title | Publisher | ISBN | Year of Publication |
| Statistical Physics I | MPH | 978- 93-90758-27-2 | 2021 |
| Statistical Physics II | MPH | 978- 93-90758-72-2 | 2022 |

Research Paper Presented and Published in International Conferences

- Effect of exchange-correlations and temperature on the plasmons in nano-scale gold wire , AIP Conf. Proc. **1349**, 433 (2011).
- Dynamic density response of trapped interacting quantum gases, AIP Conf. Proc. **1393**, 335 (2011).
- Single particle density of trapped interacting quantum gases AIP Conf. Proc. **1661**, 110004 (2015).

Presented Research Papers in Conferences

Paper Presented & Conference Attended in India

- 1.Seminar cum workshop on “**First Principle and Other Simulation Methods in Condensed Matter Physics**” at Himachal Pradesh University, Shimla from 22- 29 March 2010.
2. **55th DAE Solid State Physics Symposium**, Manipal University, Karnataka from 26 to 30 December 2010 (**Presented poster**).
- 3.Seminar on “**Trends in Frontiers of Physics**” at Panjab University 15-16 February 2011.

4. International conference on “**Advances in Condensed and Nanomaterials**”, Panjab University, Chandigarh from 23 to 26 February 2011 (**Presented poster**).
5. International Workshop on “**Structure and Dynamics of Trapped quantum gases**”, Panjab University, Chandigarh from 02 to 04 February 2012.
6. International conference on “**Frontiers of Nanoscience, Nanotechnology and their application**” , Panjab University, Chandigarh from 15 to 18 February 2012 (**Presented poster**).
7. Workshop on “Parallel Computing using HPC” Panjab University, Chandigarh from 02 to 03 March 2012.
8. Workshop on “Parallel Computing using HPC”, Panjab University, Chandigarh from 21 to 22 March 2013 (**Presented oral**).
9. International Seminar on “**Current trends in quantum gases, BEC and solutions**”, Panjab University, Chandigarh from **03 to 06 March 2014**.
10. International Conference on Condensed Matter Physics, Himachal Pradesh University, Shimla from **4 to 6 November 2014. (Presented oral)**
11. National seminar on Fascination of Light and Photonics for Life, held at Government College for Girls-11, Chandigarh on **22 Jan 2016. (Presented poster)**.
12. National Workshop on “**Emerging Trends in Optical techniques and Photonics**” at Government College, Chandigarh on 4 Feb 2016 (**Presented poster**)
13. PRL Conference on Condensed Matter Physics held at **Physical Research Laboratory, Ahmedabad, India** from 11-13 April 2016 (**Delivered Invited Talk and Chaired the session**)
14. National seminar on “**Recent advances in Materials Science**” at GGSDS College, Chandigarh on **17 September 2016 (Presented poster)**
15. National Academy of Science (NASI) Workshop on “**Technological Empowerment of Women**” **8-9 March 2018**, Vigyan Bhawan, New Delhi.
16. PRL Conference on Condensed Matter Physics at held at **Physical Research Laboratory, Ahmedabad, India** on 14-16 March 2018 (**Delivered Invited talk and chaired the session**)
17. One Week TEQIP-III Sponsored online Short Term Course on “**Recent Trends in Advanced Materials and Devices**” **21 -25 September 2020** organized by NIT, Jalandhar
18. One Week TEQIP-III Sponsored online Short Term Course on “**Current Trends in Condensed Matter Physics**” **25-29 September, 2020** organized by NIT, Jalandhar

Paper Presented & Conference Attended in Abroad

1. Summer school on “Low-dimensional quantum many-body systems”, **Trier, Germany** 16 to 21 August 2012 (**presented poster**).
2. International seminar on “Quo vadis Bose-Einstein Condensation IV?”, **Bad Honnef, Germany** 21 to 25 August 2012 (**presented poster**).

3. Advanced workshop on “Non-Equilibrium Bosons: from Driven Condensates to Non-Linear optics”, **ICTP, Trieste, Italy** from 19 to 23 August 2013 (**presented poster**).
4. International seminar on Quo Vadis BEC V?, Wilhelm und Else Heraeus Foundation, **Bad Honnef, Germany**, 16 to 20 December 2014 (**presented poster**).
5. Participated in School on “Fundamentals on Quantum Transport” at **ICTP, Italy** from 31 July – 5 August 2017
6. Participated in Workshop on “Fundamentals on Quantum Transport” at **ICTP, Italy** from 7-11 August 2017
7. **Presented poster** titled “Study of one dimensional quantum fluids” in workshop on “Fundamentals on Quantum Transport” from 7-11 August 2017
8. Workshop on “Correlations and Transport in One-Dimensional Structures”, **Dresden, Germany** from 3 -7 July 2019 (**Delivered talk**)

Others

Qualified National Eligibility Test (NET)
under Council of Scientific & Industrial Research(CSIR), New Delhi
(**All India Rank 59**)