

# Curriculum Vitae

## Dr. Ram Prasad Prajapati

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### Brief Summary

I am working as **Associate Professor** of Physics in *School of Physical Sciences, JNU New Delhi* since Nov. 2020 onwards. Previously, I have worked as **Assistant Professor** in Department of Pure and Applied Physics, *Guru Ghasidas Central University, Bilaspur (C.G.)* from July 2011 to Nov. 2020. I have more than **17 years of teaching experience** at **UG, PG and Ph.D** level. I worked as **Postdoctoral Fellow** at *Institute for Plasma Research (IPR), Gandhinagar, Gujarat* in Basic Plasma Theory division. Looking to outstanding research in the field of Astrophysical and Space Plasmas, the *Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune* has awarded me **Visiting Associateship** from 2019-2025. My current research areas are Waves, instabilities and structure formations in space and astrophysical plasmas. I work on Prof. S. Chandrasekhar's pioneer research fields hydrodynamic and hydromagnetic instabilities, MHD theory with their applications in astrophysical systems and lab experiments. I have published more than **50 research papers** in reputed international journals of high impact factors and presented more than 70 papers conferences/symposia. My total citations are **639 with h-index 15 and i10-index 27**.

I have been awarded by prestigious Prof. Bimla **Buti Young scientist Award** in Plasma Physics by Plasma Science Society of India (PSSI) in 2009, **BRICS Young Scientist Award**, China (2017), **AAPPS-DPP Best paper award**, Japan (2018), **DST-Fast-Track Young Scientists Award, Young Scientist in Physics**, Vigyan Bharati (2009) and various fellowships to visit academic institutions abroad. I have completed/ongoing **4 major research projects** of more than Rs. 50.00 lakhs funded by **SERB, New Delhi, ISRO, Bengaluru and UGC New Delhi**. I am working as **Guest Editor** of reputed journals; *Physica Scripta (IOP, UK)* and *Journal of Astronomy and Astrophysics, (Springer, IAS, India)*. I have supervised **06 Ph.D. scholars** (02 awarded, 04 ongoing), **32 M.Sc. projects** in different sub-fields of plasma physics. I have organized **National Workshop on NEP-2020** (March 2021), National Conference on **Prof. Chandra's Contribution in Plasma Astrophysics** (October 2021) and recently **3<sup>rd</sup> International Conference on Plasma Theory and Simulation (PTS-2023)**. I have visited **Czech Republic, Italy, Germany, Japan, Taiwan, Australia, South Korea, Malaysia and Thailand** to deliver Talks and present research papers.

I have established Prof. S. Chandrasekhar Plasma Astrophysics Laboratory in SPS for PG and research students. Actively worked in various committees constituted by the university/SPS. I have written popular articles in Newspapers and participated in TV shows of scientific programs on Chandrayaan-3 and Aditya L1 mission of ISRO.

## Work Experience:

- **Associate Professor** (Nov. 2020 Onwards): School of Physical Sciences, Jawaharlal Nehru University, New Delhi, India
- **Assistant Professor** (July 2011-Nov 2022): Department of Pure and Applied Physics, Guru Ghasidas Central University, Bilaspur (C.G.), India.
- **Postdoctoral Fellow** (Dec. 2010-July 2011): Institute for Plasma Research, Bhat, Gandhinagar (Gujarat), India. (Mentor: Prof. Rajaraman Ganesh)
- **Visiting Associate** (Aug. 2019- July 2025): Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune, India

## Research Interest Areas:

- **Broad area: Plasma Physics**
  - Astrophysical and Space Plasmas: MHD fluid theory, Structure formations in ISM, Dense stars, Cosmic rays interaction with plasmas, Quantum plasmas, Dusty plasmas.
  - Hydromagnetic Waves and instabilities: MHD waves, Jeans (gravitational) instability, Kelvin-Helmholtz instability, Rayleigh-Taylor instability and firehose instability.

## Teaching Interest Areas:

- **Courses Taught:**
  - **Pre-Ph.D.:** Plasma Astrophysics
  - **M.Sc.:** Sub-atomic Physics, Astrophysics, Gravitation and Cosmology, Electromagnetic Theory, Electrodynamics & Plasma physics, Classical Mechanics
  - **B.Sc.:** Basic Quantum Mechanics, Modern Physics, Kinematics and Oscillations, Electromagnetic Theory, Digital Electronics.
  - **B.Tech:** Physics-I (Electromagnetism and Quantum Mechanics)

## Academic Qualifications:

### **Ph.D. (Astrophysical Plasmas):**

School of Studies in Physics, Vikram University, Ujjain (M.P.) (2010)

### **M.Sc.:**

School of Studies in Physics, Vikram University, Ujjain (M.P.) (2004)  
Fifth Rank in University Merit List.

## Awards/Fellowships/Honor:

- **Visiting Associates** (Aug. 2019- July 2025): Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune, India
- **Junior Research Fellowship** awarded by Department of Science and Technology New Delhi, from 05/03/2007 to 27/11/2007.
- **“Young Scientist in Physics”** awarded with Gold Medal in Madhya Kshetriya Vigyan Sammelan Jabalpur by MPCST Bhopal and Vigyan Bharti (M.P.), 21-22 February 2009.

- Prestigious **“Buti Young Scientist Award in Physics”** by Plasma Science Society of India (PSSI) in 24<sup>th</sup> National Symposium on Plasma Science and Technology (PLASMA-2009) NIT, Hamirpur (H.P.), 08-11 December 2009.
- **Postdoctoral Fellowship** at Institute for Plasma Research, Bhat, Gandhinagar (Gujarat), India from Dec. 2010 to July 2011.
- **DST-SERB Young Scientist Award** with project amount Rs. 11.76 lakhs from Department of Science and Technology, New Delhi in June 2013.
- **Science Academics’ Summer Research Fellowship**, Indian Academy of Sciences, March 2013.
- **BRICS Young Scientist Award-2017**, DST, New Delhi for 2nd BRICS Young Scientist Forum, Hangzhou (China), July 2017.
- **AAPPS-DPP Best Research Paper Award (Poster)**, in 2<sup>nd</sup> Asia Pacific Plasma Conference, Kanazawa, Japan, 12-17 Nov. 2018.
- Fellowship received for attending International Conference/Symposia/Workshop:
  - **Young Scientist Travel Fellowship** Scheme of DST, New Delhi:- To attend SPPT-2010 Symposium at Prague (Czech Republic) in June 2010.
  - **ICTP/IAEA Fellowship**:- To attend Workshop at ICTP, Trieste, Italy in Nov. 2010.
  - **Scholarship**:- To attend International ICPDP-2011 conference at Max-Planck Institute for Extraterrestrial Physics, Garching, Germany in May 2011.
  - **ITER-ICTP-IAEA Fellowship**:- To attend Workshop at ICTP, Trieste, Italy in Oct. 2011.
  - **Financial Assistance**:- To attend 23<sup>rd</sup> International Toki Conference, at National Institute for Fusion Science, Toki City, Japan in Nov. 2013.
  - **Travel Grant**:- To attend 18<sup>th</sup> International Congress on Plasma Physics, Kaohsiung, Taiwan in June 2016.
  - **Travel Grant**:- To attend COMAC Workshop from 21-25, November 2016 at Chiang Mai, Thailand.
  - **International Travel Grant**:- To attend 13<sup>th</sup> APPC-AIP Conference at Brisbane, Australia from 4-8, December 2016.
  - **International Travel Grant**:- To attend 2<sup>nd</sup> AAPPS-DPP Conference at Kanazawa, Japan from 12-17, November 2018.
  - **DST, New Delhi**: To participate in 2<sup>nd</sup> BRICS Young Scientists Forum at Hangzhou, China, July 2017.
  - **AAPPS-DPP (Japan)**: To deliver invited talk in APPC-2019 conference at Malaysia, Nov. 2019.
  - **IUPAP Travel Grant**: Oral paper presentation in 20<sup>th</sup> ICPP Conference at South Korea.

**Research Projects Ongoing/Completed: (Total Grants Rs. 76.08 lakh)**

- ✓ **SERB, New Delhi** sponsored research project under Fast Track Young Scientist Scheme entitled “*Linear and nonlinear instabilities in dusty and quantum plasmas*” [SR/FTP/PS-191/2011] (Rs. 11.67 lakh) 2013-2016. (Status: Completed)

- ✓ **UGC, New Delhi** sponsored research project entitled “*Hydromagnetic Instabilities in Strongly Coupled Complex Plasmas*” [F.No.-43-514/2014(SR)] (Rs. 15.00 lakh) 2015-2018. (Status: Completed)
- ✓ **ISRO, Bengaluru** sponsored research project under RESPOND Programme entitled “*Low Frequency Waves and Fluid Instabilities in Dusty Space Plasmas*” [No. ISRO/RES/2/427/21-22] (Rs. 23.58 lakh) 2019-2022. (Status: Ongoing)
- ✓ **SERB, New Delhi** sponsored research project under CRG scheme “*Cosmic ray-driven magnetohydrodynamic (MHD) waves and fluid instabilities in plasmas*” [No. CRG/2022/000591] (Rs. 25.83 lakh) 2023-2026. (Status: Ongoing)

### **Academic Assignments:**

- **Guest Editor**, Physica Scripta Topical Issue on “Focus on Plasma Theory and Simulations”, IOP, UK
- **Guest Editor**, Journal of Astronomy and Astrophysics, Springer
- **Member, Editorial Board**, Physica Scripta, Institute of Physics (IOP), UK (2020-2025)
- **Member, Editorial Board**, “Discover Space” journal, Springer Nature (2024-2029)
- **Councilor**, in Executive Council of Plasma Science Society of India (PSSI) (2014-16).
- **Member, Board of Studies**, in Physics, Samrat Asoka Technical Institute, Vidisha, M.P.
- **Member, Board of Studies** in Physics, Guru Ghasidas Central University, Bilaspur (2014-2017).
- **Chaired Technical Session on “Astro/Plasma”** in 14<sup>th</sup> APPC Conference-2019 at Institute of Physics, Kuching, (Malaysia) from 18-22 Nov. 2019.
- **Chaired Technical Session** in 12<sup>th</sup> International Conference on Plasma Science and Applications (ICPSA-2019), University of Lucknow, Lucknow, 11-14, Nov 2019.
- Referee for Peer Review process of international reputed journals:
  - **The Astrophysical Journal** (IOP, UK)
  - **Physics of Plasmas** (American Institute of Physics, USA)
  - **Physics of Fluids** (American Institute of Physics, USA)
  - **Plasma Physics and Controlled Fusion** (IOP, UK)
  - **Astrophysics & Space Science** (Springer, Netherlands)
  - **Physics Letters A** (Elsevier, Netherlands)
  - **IEEE Trans. Plasma Science**, (USA)
  - **Physica Scripta** (Institute of Physics, UK)
  - **Pramana- J. Physics** (Indian Academy of Sciences & Springer)
  - **J. Plasma Physics**, (Cambridge Press), Cambridge
  - **European Physical Journal D** (Springer Nature)
  - **European Physical Journal Plus** (Springer Nature)
  - **Euro Physics Letters** (IOP, London)
  - **Z. Naturforsch A** (De-Gruyter, Germany)
  - **J. Astrophysics & Astronomy** (Indian Academy of Sciences) and many more.
  - **Waves in Random and Complex Media** (Taylor Francis)
  - **Frontiers in Physics**, Springer Verlag
  - **Nature Astronomy**, Elsevier

### **Abroad Visits:**

- **Czech Technical University, Prague (Czech Republic)** in June 2010 to attend 24<sup>th</sup> International Symposium on Plasma Physics and Technology (SPPT-2010).
- **ICTP, Trieste (Italy)**, in November 2010 to attend Joint ICTP/IAEA International Workshop on Dense Magnetized Plasma and Plasma Diagnostics.
- **Max-Planck Institute for Extraterrestrial Physics, Garching (Germany)**, in May 2011 to attend International Conference on Physics of Dusty Plasma (ICPDP-2011).
- **National Institute for Fusion Science, Toki City, Gifu (Japan)**, in Nov. 2013 to attend 23<sup>rd</sup> International Toki Conference on “Large Scale Simulation in Fusion Science and Plasma”.
- **Kaohsiung, (Taiwan)**, 27 June-01 July 2016 to attend 18<sup>th</sup> International Congress on Plasma Physics (ICPP-2016).
- **Chiang Mai (Thailand)**, 21-25, November 2016 to attend COMAC Workshop N-body and Hydrodynamic Simulations of Galaxies and Large-Scale Structure”.
- **Brisbane (Australia)**, 4-8, December 2016, to attend 13<sup>th</sup> Joint APPC-AIP Conference.
- **Hangzhou, China**, 11-15 July 2017, to participate in 2<sup>nd</sup> BRICS Young Scientist Forum.
- **Chiang Mai (Thailand)**, 29 Jan-03 Feb 2018, 4<sup>th</sup> ASEAN School on Plasma and Nuclear Fusion (ASPNF-2018).
- **Kanazawa (Japan)**, 12-17 Nov. 2018, 2<sup>nd</sup> Asia Pacific Plasma Conference (AAPPS-DPP-2018).
- **Kuching (Malaysia)**, 17-21 Nov. 2019, 14<sup>th</sup> Asia Pacific Physics Conference (APPC-2019).
- **Gyeongju (Korea)**, 27 Nov.- 02 Dec 2022, 20<sup>th</sup> International Congress on Plasma Physics (ICPP-2022).

### **Conferences/Webinar Organized:**

- ✓ **Convener, A Webinar on “Evolution of Quantum Theory” by Prof. Ajoy Ghatak**, Organized by Department of Pure and Applied Physics, GGV, Bilaspur 11, September 2020.
- ✓ **Convener, Two Days International e-Conference on Plasma Theory and Simulations (PTS-2020)**, Organized by Department of Pure and Applied Physics, GGV, Bilaspur on 14-15, September 2020.
- ✓ **Convener, One Day Workshop on “National Education Policy-2020: Opportunities in Research and Innovation”** School of Physical Sciences, JNU, New Delhi, March 31, 2021.
- ✓ **Convener, Two Days National Conference on “Chandra’s Contribution in Plasma Astrophysics”** School of Physical Sciences, JNU, New Delhi, October 19-20, 2021.
- ✓ **Convener, 3<sup>rd</sup> International Conference on Plasma Theory and Simulations (PTS-2023)”** School of Physical Sciences, JNU, New Delhi, September 21-23, 2023.

### Skill Development/Orientation/Refresher Courses Attended:

- **12<sup>th</sup> Orientation Programme**, Academic Staff College, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) from 10-11-2014 to 06-12-2014.
- Interdisciplinary Refresher Course on “**Methodology in Social Science and Pure & Applied Sciences**” UGC-HRDC, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) from 18-11-2015 to 09-12-2015.
- Interdisciplinary Refresher Course on “**Instrumentation and Experimental Techniques in Physical Sciences**” UGC-HRDC, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) from 09-12-2019 to 21-12-2019.

### List of Research Paper Publications:

#### **A Publications in International Journals: (49)**

##### **2008:**

1. Self-gravitational instability of rotating anisotropic heat conducting plasma, **R. P. Prajapati**, A. K. Parihar and R. K. Chhajlani, *Physics of Plasmas* **15**, 012107 (2008). [**AIP (USA), IF – 2.375**].
2. Self-gravitating rotating anisotropic pressure plasma in presence of Hall current and electrical resistivity with generalized polytropic laws, **R. P. Prajapati**, G. D. Soni and R. K. Chhajlani, *Physics of Plasmas* **15**, 062108 (2008) [**AIP (USA), IF – 2.375**].

##### **2009:**

3. Kelvin-Helmholtz and Rayleigh-Taylor instability of two superposed magnetized incompressible fluids with suspended dust particles, **R. P. Prajapati**, G.D. Soni, R.K. Sanghvi and R. K. Chhajlani, *Z. Naturforsch A* **64a**, 455 (2009). [**Verlag (Germany), IF-1.712**].

##### **2010:**

4. Self-gravitational instability of rotating viscous Hall plasma with arbitrary radiative heat-loss functions and electron inertia, **R. P. Prajapati**, R. K. Pensia, S. Kaothekar and R. K. Chhajlani, *Astrophysics & Space Science* **327**, 139 (2010). [**Springer (Netherlands), IF-1.909**].
5. Effect of dust temperature on radiative condensation instability of self-gravitating magnetized dusty plasma, **R. P. Prajapati** and R. K. Chhajlani, *Physica Scripta* **81**, 045501 (2010). [**The Royal Swedish Academy of Sciences (UK), IF-3.081**].
6. Kelvin-Helmholtz instability of magnetized plasmas with surface tension and dust particles, **R. P. Prajapati** and R. K. Chhajlani, *J. Physics Conf. Ser.* **208**, 012078 (2010), [**IOP (UK)**].
7. Kelvin-Helmholtz instability of anisotropic pressure plasma using generalized polytropic laws, **R. P. Prajapati**, R. K. Chhajlani and A. K. Parihar, *J. Phys. Conf. Ser.* **208**, 012077 (2010). [**IOP (UK)**].
8. Rayleigh-Taylor instability of two superposed magnetized fluids with suspended dust particles, P. K. Sharma, **R. P. Prajapati** and R. K. Chhajlani, *Thermal Science* **14**, 11 (2010). [**Vinica Institute of Nuclear Science (Serbia), IF-1.94**].



9. Effect of surface tension and rotation on Rayleigh-Taylor instability of two superposed fluids with suspended dust particles, P. K. Sharma, **R. P. Prajapati** and R. K. Chhajlani, *Acta Physica Polonica A* **118**, 576 (2010), [Polish Physical Society (Poland), **IF – 0.579**].
10. Effect of Hall current on Jeans instability of magnetized quantum viscous plasma, **R. P. Prajapati** and R. K. Chhajlani, *Physica Scripta* **82**, 055003 (2010). [The Royal Swedish Academy of Sciences (UK), **IF-3.081**].
11. Kelvin-Helmholtz and Rayleigh Taylor instability of two superposed fluids with suspended dust particles flowing through porous media, **R. P. Prajapati** and R. K. Chhajlani, *Journal of Porous Media* **13**, 765 (2010). [Begell House (USA), **IF-1.752**].
12. Effect of pressure anisotropy and flow velocity on Kelvin-Helmholtz instability of anisotropic magnetized plasma using generalized polytrope laws, **R. P. Prajapati** and R. K. Chhajlani, *Physics of Plasmas* **17**, 112108 (2010). [AIP (USA), **IF – 2.375**].
- 2011:**
  13. Effect of magnetic field on Jeans instability of quantum dusty plasma: Application in White Dwarf Star **R. P. Prajapati** and R. K. Chhajlani, *Acta Technica* **56**, T414-T424 (2011). [Institute of Thermomechanics AS CR (Czech Republic), **IF –0.97**]
  14. Effect of polarization force on the Jeans instability of self-gravitating dusty plasma, **R. P. Prajapati**, *Physics Letters A* **375**, 2624 (2011). [Elsevier Publication, **IF-2.707**].
- 2012:**
  15. Jeans instability of self-gravitating magnetized strongly coupled plasma, **R. P. Prajapati**, P. K. Sharma, R. K. Sanghvi and R. K. Chhajlani, *J. Phys. Conf. Ser.* **365**, 012040 (2012). [Institute of Physics (UK)].
- 2013:**
  16. Effect of magnetic field and radiative condensation on Jeans instability of self-gravitating dusty plasma with polarization force, **R. P. Prajapati**, *Physics Letters A* **377**, 291 (2013). [Elsevier Publication, **IF-2.707**]
  17. Self-gravitational instability in magnetized finitely conducting strongly coupled viscoelastic fluid, **R. P. Prajapati**, and R. K. Chhajlani, *Astrophys. & Space Sci.* **344**, 371 (2013). [Springer (Netherlands), **IF-1.909**].
- 2014:**
  18. Effect of quantum corrections on the Jeans instability of self-gravitating viscoelastic dusty fluid, **R. P. Prajapati** and R. K. Chhajlani, *Astrophys. & Space Sci.* **350**, 637 (2014). [Springer (Netherlands), **IF-1.909**].
  19. Hydromagnetic instability in compressible fluid in porous media, S. Argal, A. Tiwari, **R. P. Prajapati** and P. K. Sharma, *J. of Physics: Conf. Ser.* **534**, 012057 (2014). [IOP (UK)].
  20. Low frequency waves and gravitational instability in homogeneous magnetized gyrotropic quantum plasma, **R. P. Prajapati**, *Physics of Plasmas* **21**, 112101 (2014). [AIP (USA), **IF – 2.375**].
- 2015:**
  21. Jeans instability of rotating viscoelastic fluid in the presence of magnetic field, P. K. Sharma, S. Argal, A. Tiwari and **R. P. Prajapati**, *Z. Naturforsch A*, **70**, 39 (2015). [De Gruyter (Germany), **IF – 1.712**].

22. Radiative condensation instability in gravitating strongly coupled dusty plasma with polarization force, **R. P. Prajapati** and S. Bhakta, *Astrophys. Space Sci.*, **357**, 101 (2015). [Springer (Netherlands), **IF-1.909**].
  23. Influence of dust charge fluctuation and polarization force on radiative condensation instability of magnetized gravitating dusty plasma, **R. P. Prajapati** and S. Bhakta, *Physics Letters A* **379**, 2723 (2015). [Elsevier Publication, **IF-2.707**]
- 2016:**
24. Rayleigh-Taylor instability in non-uniform magnetized rotating strongly coupled viscoelastic fluid, **R. P. Prajapati**, *Physics of Plasmas* **23**, 022106 (2016). [AIP (USA), **IF-2.375**].
  25. Rayleigh-Taylor instability in dusty magnetized fluids with surface tension flowing through porous medium, P. K. Sharma, A. Tiwari, **R. P. Prajapati** and R. K. Chhajlani, *Thermal Science* **20**, 119 (2016). [Vinica Institute of Nuclear Science (Serbia), **IF-1.94**].
  26. Effect of Fermi Pressure and Bohm Potential on Jeans Instability of Quantum Dusty Plasma in Presence of Polarization Force, Prerana Sharma, Shweta Jain, **R.P. Prajapati** and R. K. Chhajlani, *IEEE Trans. Plasma Science* **44**, 862 (2016). [IEEE **IF-1.309**]
  27. Jeans instability in collisional strongly coupled dusty plasma with radiative condensation and polarization force, **R. P. Prajapati**, S. Bhakta and R. K. Chhajlani, *Physics of Plasmas* **23**, 053703 (2016). [AIP (USA), **IF – 2.375**].
  28. Jeans instability of partially ionized self-gravitating viscous plasma with Hall effect FLR corrections and porosity, S. Kaothekar, G. D. Soni, **R. P. Prajapati** and R. K. Chhajlani, *Astrophys. Space Sci.*, **361**, 204 (2016). [Springer (Netherlands), **IF-1.909**].
  29. Quantum effects on the Rayleigh-Taylor instability of stratified plasma in the presence of suspended particles, G. A. Hoshoudy and **R. P. Prajapati**, *Pramana J-Physics* **87**, 99 (2016) [Springer, **Impact factor – 2.699**].
  30. Effect of different dust flow velocities on combined Kelvin-Helmholtz and Rayleigh-Taylor instabilities in magnetized incompressible dusty fluids, Bivash Dolai, **R. P. Prajapati**, and R. K. Chhajlani, *Physics of Plasmas* **23**, 113704 (2016). [AIP (USA), **IF – 2.375**].
- 2017:**
31. Gravitational instability of rotating anisotropic pressure quantum plasma, S. Argal, **R. P. Prajapati** and P. K. Sharma, *J. Plasma Physics*, **83**, 905830203 (2017). [Cambridge University Press, (UK), **IF-2.691**]
  32. Small amplitude waves and linear firehose and mirror instabilities in rotating polytropic quantum plasma, S. Bhakta and **R. P. Prajapati**, *Physics of Plasmas* **24**, 082113 (2017). [AIP, **IF – 2.375**].
  33. Rayleigh-Taylor instability and internal waves in strongly coupled quantum plasma, Bivash Dolai and **R. P. Prajapati**, *Physics of Plasmas* **24**, 112101 (2017). [AIP, **IF – 2.375**].
  34. Influence of neutrino beam on the Jeans instability in a magnetized quantum plasma, **R. P. Prajapati**, *Physics of Plasmas* **24**, 122902 (2017). [AIP, **IF – 2.375**].



**2018:**

35. Effects of Hall current and electrical resistivity on the stability of gravitating anisotropic quantum plasma, S. Bhakta and **R. P. Prajapati**, *Physics of Plasmas* **25**, 022101 (2018). [[AIP \(USA\)](#), **IF – 2.375**].
36. The rotating Rayleigh-Taylor instability in a strongly coupled dusty plasma, Bivash Dolai and **R. P. Prajapati**, *Physics of Plasmas* **25**, 083708 (2018). [[AIP \(USA\)](#), **IF – 2.375**].

**2019:**

37. Effects of radiation pressure and polarization force on Jeans instability in magnetized strongly coupled dusty plasma, S. Bhakta, R. K. Chhajlani and **R. P. Prajapati** *Physica Scripta* **94**, 045603 (2019). [[IOP \(UK\)](#), **IF-3.081**].

**2020:**

38. Effects of dust charge gradient and polarization forces on the waves and Jean instability in strongly coupled dusty plasma, Bivash Dolai and **R. P. Prajapati** *Physics Letters A* **384**, 126462 (2020). [[Elsevier Publication](#), **IF-2.707**].

**2021:**

39. Gravitational instability with dust charge gradient and ion drag forces in unmagnetized dusty plasma, Bivash Dolai and **R. P. Prajapati** *Physica Scripta* **96**, 025601 (2021). [[IOP \(UK\)](#), **IF-3.081**].
40. Suppression of the Kelvin-Helmholtz instability due to polarization force in nonuniform magnetized sheared dusty plasmas, **R. P. Prajapati** and Pallab Boro, *AIP Advances* **11**, 095202 (2021). [[AIP \(USA\)](#), **IF-1.697**]

**2022:**

41. Gravitational instability in radiative molecular clouds including cosmic ray diffusion and ion Larmor radius corrections, **R. P. Prajapati** *Month. Not. Roy. Astron. Soc.* **510**, 2127 (2022). [[Royal Astronomical Soc. \(UK\)](#), **IF-5.235**].
42. Effects of heat-flux vector and Braginskii viscosity on wave dissipation and instabilities in rotating gravitating anisotropic plasmas, E. T. Desta, **R. P. Prajapati** and T. H. Eritro, *European Physical Journal Plus* **137**, 437 (2022). [[Springer](#), **I.F.- 3.4**].
43. Effects of cosmic radiation pressure on the gravitational instability of rotating plasmas, **R. P. Prajapati** and Isha Shailesh, *J. Astrophysics & Astronomy* **43**, 33 (2022). [[Springer](#), **I.F.- 1.610**]
44. Editorial: Waves, Instabilities and Structure Formation in Astrophysical Plasmas, **R. P. Prajapati** and Vinod Krishan, *J. Astrophysics & Astronomy* **43**, 19 (2022). [[Springer](#), **I.F.- 1.610**]
45. Kelvin–Helmholtz instability in sheared dusty plasma flows including dust polarization and ion drag forces, B. Dolai and **R. P. Prajapati**, *Physica Scripta* **97**, 065603 (2022). [[IOP \(UK\)](#), **IF 3.081**].
46. Dissipation of hydromagnetic waves in the viscous polytropic zone of the solar wind including FLR corrections, ohmic diffusion and the Hall effect, **R. P. Prajapati**, E. T. Desta,

Mei-Ching Fok and T. H. Eritro, *Month. Not. Roy. Astron. Soc.* **510**, 2127 (2022). [Royal Astronomical Soc. (UK), IF-5.235].

**2023:**

47. Cosmic ray-driven magnetohydrodynamic (MHD) waves in magnetized self-gravitating dusty molecular clouds, Pallab Boro and **R. P. Prajapati**, *Month. Not. Roy. Astron. Soc.* **522**, 1752 (2023). [Royal Astronomical Soc. (UK), IF-5.235].
48. Rayleigh-Taylor instability in compressible ultra-relativistic degenerate strongly coupled plasma, R. Bhambhu and **R. P. Prajapati**, *Physics of Plasmas* **30**, 042114 (2023). [AIP (USA), IF – 2.2].
49. Wave modes and instabilities in gravitating magnetized polytropic quantum plasmas including viscosity tensor and FLR corrections, Vinesh K. Sangwan and **R. P. Prajapati**, *Month. Not. Roy. Astron. Soc.* **525**, 1 (2023). [Royal Astronomical Soc. (UK), IF-5.235].
50. Suprathermal corrections on galactic cosmic ray driven MHD waves and gravitational instability in astrophysical plasmas, Pallab Boro and **R. P. Prajapati**, *Month. Not. Roy. Astron. Soc.* (Under Review). [Royal Astronomical Soc. (UK), IF-5.235]

#### **B Publications in Proceedings: (04)**

1. Jeans instability in quantum magnetized dusty plasma: Formation of compact stars, **R. P. Prajapati** and R. K. Chhajlani, *Proceedings of EIPT*, pp. 270 (2011). [Excel Publishers, New Delhi]
2. Influence of polarization force on Jeans instability of magnetized dusty plasma, **R. P. Prajapati** and R. K. Chhajlani, *AIP Conference Proceedings*, **1397**, pp. 229-230 (2011) [American Institute of Physics (USA)].
3. Gravitational instability of dusty plasma with radiative process, **R. P. Prajapati** and R. K. Chhajlani, *AIP Conference Proceedings*, **1397**, pp. 267-268 (2011) [American Institute of Physics (USA)].
4. Influence of rotation on Rayleigh-Taylor instability of magnetized strongly coupled viscoelastic fluid, **R. P. Prajapati**, *Conference Proceedings*, Int. Conf. Proc. on High Power Coherent Radiation Generation & its Interaction with Matters ISBN 978-81-932836-6-0, pp. 24-28 (2016) [SATI Vidisha, M.P.].

#### **Papers presented in Conferences/Symposia [65]:**

#### **Invited Talks: (18)**

1. “MHD instabilities and their role in plasma confinement” in 2<sup>nd</sup> BRICS Young Scientist Forum, Hangzhou, China, 11-15, July 2017.
2. Hydromagnetic instabilities in strongly coupled dusty (complex) plasmas, *International Conference on Space & Plasma Science (ICSPS-2015)*, Govt. Vivekanand PG College, Maihar (M.P.), 22-24, September 2015.

3. Dust in MHD instabilities and Fusion, *4<sup>th</sup> ASEAN School on Plasma and Nuclear Fusion (ASPNF-2018)*, Chiang Mai University, **Chiang Mai (Thailand)**, 29 Jan-03 Feb 2018.
4. “Nuclear Fusion: A Future Source of Unlimited Energy”, *BRICS YSF Alumni Conclave, NIAS, Bengaluru*, 2-4 December 2018.
5. “Waves, instabilities and structure formations in dusty (complex) plasma: Some astrophysical applications, *PLASMA-2018 conference*, **Delhi University**, 4-7 December 2018.
6. Magnetohydrodynamic fluid theory for analysis of wave propagation, *Skill Development Training programme on Basic Laboratory Skill and Safety Management in Physical Sciences*”, 12-13, March 2019 **GGV, Bilaspur**.
7. Firehose and mirror instabilities in degenerate quantum plasmas, *12<sup>th</sup> International Conference on Plasma Science and Applications (ICPSA-2019)*, **University of Lucknow, Lucknow**, 11-14, Nov 2019.
8. Waves and instabilities in dusty space plasmas, *14<sup>th</sup> Asia Pacific Physics Conference (APPC-2019)*, **AAPPS and Institute of Physics Malaysia**, 17-21 November (2019).
9. Ujjain (Avanti): A Centre of Great Indian Ancient Mathematicians and Astronomers, **27<sup>th</sup> International Conference on International Academy of Physical Sciences (CONIAPS XXVII)**, Vikram University, Ujjain, 26-28, October, 2021.
10. Cosmic ray diffusion and gravitational collapse in radiative molecular clouds, **21<sup>st</sup> National Space Science Symposium, IISER Kolkata**, 31<sup>st</sup> Jan. to 4<sup>th</sup> Feb. 2022.
11. Gravitational instability of molecular clouds including cosmic rays diffusion and finite Larmor radius corrections, **2<sup>nd</sup> International Conference on Plasma Theory and Simulations, University of Lucknow**, 20-22 June, 2022.
12. A Talk on “**National Education Policy -2020: Opportunities and Challenges**”, Govt. College Ghattiya, Ujjain M.P., 14<sup>th</sup> Feb. 2022.
13. A Talk on “**Ancient Theory of Atomism and Kanada’s Contribution**” Two Days Workshop on Development of Physics Content in perspective of NEP-2020, Sardar Patel University, Mandi (H.P.), 29-30 June, 2022.
14. A Talk on “Cosmic-rays driven MHD waves and gravitational instability in magnetized plasmas” **6<sup>th</sup> Asia Pacific Conference on Plasma Physics**, 9-14 October, 2022, as e-conference (AAPPS-DPP, Japan)
15. Popular lecture on “**Fundamentals of Plasma Physics: Applications in Fusion and Astrophysical Plasmas**” Department of Physics, Guru Nanak Dev University, Amritsar, Punjab, 03<sup>rd</sup> February 2023.
16. A talk on “**Basic principles of Magnetohydrodynamics: Application to the Sun and Heliosphere**”, Department of Physics, IIT BHU, Varanasi, 25-27, Feb. 2023.

17. A Talk on “**Hydrodynamic fluid instabilities: Applications in space and astrophysical plasmas**”, International Conference on Recent Advances in Mathematical Sciences (ICRAMS-2023), 29-30 March, 2023, Department of Physical, Himachal Pradesh University, Shimla (H.P.)
18. Invited Talk on “**Pressure anisotropy driven MHD waves and firehose instability in space plasmas**”, 38<sup>th</sup> National Symposium on Plasma Science and Technology (PLASMA-2023), 4-8, December 2023, UPES, Dehradun.

### **Webinar (Online) Talks:**

1. Webinar on Plasma Science and Future Perspective: *Plasma Physics Early Universe to ITER*, Shri Vaishnav Vidhyapeet Vishwavidyalaya, Indore, 10-12, August 2020.
2. One Day Webinar on Plasma Science & It's Applications, Title of Talk: *Nuclear Fusion: Future Source of Unlimited Clean Energy*, Barkatullah University, Bhopal (M.P.), 29, July 2020.
3. *Role of Ancient Indian Scientists in the development of Science and Mathematics*, Govt. Kalidas College, Ujjain, 13-08-2021.
4. **India in Future**, Madhav Sciece College, Ujjain M.P.,
5. **Ujjain (Avanti): A Great Centre of Ancient Mathematician and Astronomer**, Institute of Computer Science, Vikram University, Ujjain M.P., October 26-28, 2021.
6. **Fundamentals of Quantum Mechanics**, LCIT College, Bilaspur C.G., January 10, 2022.
7. **Waves, instabilities and structure formation in astrophysical plasmas**, Department of Physics, Central University of Himachal Pradesh, Dharmshala (H.P.) 11 April, 2022.
8. **Hydrodynamic instabilities in astrophysical plasmas**, IGNOU Regional Centre, Bhubneshwar, 4<sup>th</sup> January 2024.

### **Papers presented in conferences/Symposia [11 Oral presentations]: 39**

#### **II. International (18):**

1. Effect of magnetic field on Jeans instability of quantum dusty plasma: application in white dwarf star, **R. P. Prajapati** and R. K. Chhajlani, 24<sup>th</sup> *International Symposium on Plasma Physics and Technology (SPPT-2010)*, Czech Technical University, **Prague 6, Czech Republic**, 14-17 June 2010. **(Oral)**
2. Hydromagnetic instabilities in magnetized plasmas, **R. P. Prajapati**, *Joint ICTP/IAEA workshop on dense magnetized plasma and plasma diagnostics*, The Abdus Salam International Center for Theoretical Physics (ICTP), **Trieste, Italy**, 15-26 Nov. 2010. **(Oral)**

3. Influence of polarization force on Jeans instability of self-gravitating magnetized dusty plasma, **R. P. Prajapati** and R. K. Chhajlani, *6<sup>th</sup> International Conference on Physics of Dusty Plasma (ICPDP-2011)*, **Garmisch-Parterkichen, Germany**, 16-20 May 2011.
4. Hydrodynamic stability of Conservative Regularized Couette Flow, **R. P. Prajapati**, R. Ganesh, A. Sen and C. Thyagaraja, *International Conference on Complex Processes in Plasmas and Nonlinear Dynamical Systems (ICCPNDS-2012)*, **Institute for Plasma Research, Bhat, Gandhinagar (Gujarat), India**, 6-9 Nov. 2012.
5. Non-ideal effects in self-gravitating uniformly rotating magnetized viscoelastic fluids, **R. P. Prajapati** and R. K. Chhajlani, *23<sup>rd</sup> International Toki Conference on Large Scale Simulation and Fusion Science (ITC-23)*, **National Institute for Fusion Science, Gifu, Japan**, 18-21 Nov. 2013.
6. Effects of rotation and Hall current on the Jeans instability of magnetized finitely conducting viscoelastic fluid, **R. P. Prajapati** and R. K. Chhajlani, *7<sup>th</sup> International Conference on the Physics of Dusty Plasmas (ICPDP-2014)*, **New Delhi**, March 3-7, 2014.
7. Radiative-Condensation Instability In Gravitating Strongly Coupled Dusty Plasma With Polarization Force, **R. P. Prajapati**, S. Bhakta and R. K. Chhajlani, *29<sup>th</sup> National Symposium on Plasma Science and Technology & International Conference on Plasma Science and Technology (PLASMA 2014)*, M. G. University **Kottayam, Kerala**, 8-11 December 2014.
8. Radiative condensation instability in gravitating strongly coupled complex plasma with polarization force, **R. P. Prajapati**, S. Bhakta and R. K. Chhajlani, *International Conference on Emerging Interfaces of Plasma Science and Technology (EIP-2015)*, S. S. in Physics, Vikram University, **Ujjain (M.P.)**, 9-10 March, 2015. **(Oral)**
9. Radiative condensation instability in partially ionized dusty plasma with dust-neutral collisions and polarization force, *International Conference on Space & Plasma Science (ICSPS-2015)*, Govt. Vivekanand PG College, **Maihar (M.P.)**, 22-24, September 2015.
10. Influence of rotation on Rayleigh-Taylor instability of magnetized strongly coupled viscoelastic fluid, *International Conf. on High Power Coherent Radiation Generation & its Interaction with Matter*, SATI, **Vidisha (M.P.)**, 12-14 Feb. 2016. **(Oral)**
11. Influence of Rotation on Rayleigh-Taylor Instability in Non-uniform Magnetized Strongly Coupled plasma, *18<sup>th</sup> International Congress on Plasma Physics (ICPP-2016)*, **Kaohsiung, Taiwan**, June 27-July 01, 2016.
12. Jeans Instability in Radiative Collisional Dusty Plasma with Polarization Force, *13<sup>th</sup> Joint APPC-AIP Conference*, **Brisbane, Australia**, December 4-8, 2016.
13. Rayleigh-Taylor Instability in non-uniform magnetized rotating strongly coupled viscoelastic fluid, *13<sup>th</sup> Joint APPC-AIP Conference*, **Brisbane, Australia**, December 4-8, 2016.
14. Small amplitude waves and linear firehose and mirror instabilities in rotating polytropic quantum plasmas, *International Symposium on Nonlinear Waves in Fluids and Plasmas*, **IIT, Delhi**, 28-02-2017 to 01-03-2017.



15. Neutrino-beam-plasma interactions in gravitating dense quantum plasma, *2<sup>nd</sup> Asia Pacific Plasma Conference (AAPPS-DPP-2018)*, **Kanazawa (Japan)**, 12-17 Nov. 2018.
16. Small amplitude waves and linear firehose and mirror instabilities in polytropic quantum plasma, *2<sup>nd</sup> Asia Pacific Plasma Conference (AAPPS-DPP-2018)*, **Kanazawa (Japan)**, 12-17 Nov. 2018.
17. Rayleigh-Taylor instability and internal waves in Strongly coupled quantum plasma, *14<sup>th</sup> Asia Pacific Physics Conference (APPC-2019)*, **AAPPS and Institute of Physics Malaysia**, 17-21 November (2019).
18. Dissipation of MHD waves in the viscous polytropic zone of the solar wind with non-ideal and FLR effects, *20<sup>th</sup> International Congress on Plasma Physics (ICPP-2022)*, **Gyeongju, Korea**, 27 Nov. – 02 Dec. 2022.

### III. National (21):

1. Self-gravitational instability of rotating anisotropic heat-conducting plasma, **R. P. Prajapati**, A. K. Parihar, P. K. Sharma and R. K. Chhajlani, *PLASMA-2006*, MNIT Jaipur, India, 19-22 Dec. 2006.
2. Jeans instability of self-gravitating dusty plasma in the low frequency range, R. K. Chhajlani, **R.P.Prajapati**, S. Kaothekar, P. K. Sharma and R. K. Pensia, *Bhartiya Vigyan Sammelan*, Bhopal, India, 23-25 Nov. 2007.
3. Effect of rotation on Kelvin-Helmholtz instability of two superposed streaming magnetized fluids with suspended dust particles, **R. P. Prajapati** and R. K. Chhajlani, *PLASMA-2007*, Ahmedabad, India, 6-10 Dec. 2007.
4. Kelvin-Helmholtz instability of compressible fluids with generalized polytrope laws using three-dimensional configurations, **R. P. Prajapati**, *Silver Jubilee All India Young Scientist Conference, MPCST*, Bhopal, India, 23-25 Nov. 2007.
5. Kelvin-Helmholtz instability of anisotropic pressure plasma with oblique magnetic field using generalized polytrope laws, **R. P. Prajapati** and R. K. Chhajlani, *Fourth M.P. Science Congress-2007*, Govt. Holkar Science College, Indore, 26-27 Dec. 2007.
6. Kelvin-Helmholtz instability of magnetized plasmas with surface tension and dust particles, **R. P. Prajapati** and R. K. Chhajlani, *PLASMA-2008*, BARC Mumbai, India, 10-13 Dec. 2008.
7. Kelvin-Helmholtz instability of anisotropic pressure plasma using generalized polytrope laws with three-dimensional configurations, **R. P. Prajapati**, *Madhya Kshetriya Vigyan Sammelan*, Govt. M. Home Science & Science College Jabalpur, M.P. India, 21-22 Feb. 2009 **(Oral)** (Won Young Scientists Award in Physics with Gold Medal).
8. Effects of pressure anisotropy on the Kelvin-Helmholtz instability of collisionless plasma using generalized polytrope laws, **R. P. Prajapati**, *24<sup>th</sup> M.P. Young Scientist Congress*, M.P. Council of Science & Technology Bhopal, M.P. India, 28 Feb-01 March 2009. **(Oral)**

9. Effect of dust particles and flow velocity on Kelvin-Helmholtz instability of magnetized plasmas, **R. P. Prajapati**, 97<sup>th</sup> ISCA Young Scientists Award Programme-2009-10, University of Kerla, Thiruvananthapuram, **Kerla India**, 27<sup>th</sup> October 2009. **(Oral)**
10. Effects of radiative pressure and heat-loss functions on Jeans instability of magnetized self-gravitating dusty plasma, **R. P. Prajapati** and R. K. Chhajlani, *PLASMA-09*, NIT, **Hamirpur (H.P.)**, 8-11 December 2009.
11. Effect of flow velocity and pressure anisotropy on Kelvin-Helmholtz instability of anisotropic plasma using polytrope laws, **R. P. Prajapati** and R. K. Chhajlani, *PLASMA-09*, NIT, Hamirpur (H.P.), 8-11 December 2009 (Won Buti Young Scientists Award). **(Oral)**
12. Condensation of astrophysical quantum dusty plasma; Formation of white dwarf star and modified Jeans instability, **R. P. Prajapati**, *Silver Jubilee M. P. Young Scientist Congress*, MPCST Bhopal (M.P.), 22 & 23 February 2010. **(Oral)**
13. Kelvin-Helmholtz instability of magnetized plasmas with suspended dust particles and different flow velocities flowing through porous medium, **R. P. Prajapati** and R. K. Chhajlani, *NSRAP-2011*, Govt. Holker Science College Indore (M.P.), 15 Feb 2011.
14. Jeans instability in quantum dusty magnetized plasma: Formation of compact stars, **R. P. Prajapati**, *EIPT-2011*, S. S. in Physics, Vikram University Ujjain (M.P.), 28-30 March 2011. **(Oral)**
15. Hydromagnetic instabilities in plasmas, R. K. Chhajlani and **R. P. Prajapati**, *PLASMA-2011*, BIT, Patna (Bihar), 20-23 Dec. 2011. **(Oral)**
16. Neutrino-Beam-Plasma interactions in quantum magnetoplasma, **R. P. Prajapati**, *PLASMA-2017*, IPR Gandhinagar (Gujarat), India, 7-10 Nov. 2017.
17. Jeans instability of dusty plasma with dust charge gradient force, **R. P. Prajapati**, B. Dolai and R. K. Chhajlani, *PLASMA-2018*, Delhi University, 4-7 December 2018.
18. Neutrino-beam plasma interactions in dense gravitating degenerate quantum plasma, R. P. Prajapati and R. K. Chhajlani, *EIPT-2019*, S. S. in Physics, Vikram University Ujjain M.P., 29-30, Aug. 2019
19. Effects of ion drag force and dust charge gradient force on the Coulomb fissioning of unmagnetized dusty plasma, **R. P. Prajapati** and K. Avinash, 3<sup>rd</sup> National Seminar on Nonlinear and Complex Phenomena, Jadavpur University (Kolkata), 18-11, February 2020.
20. Cosmic rays diffusion and gravitational collapse in radiative molecular clouds including ion Larmor radius corrections, **R. P. Prajapati**, *PLASMA-2021*, 13-15, December 2021, BIT Mesra Jaipur Campus.
21. Hydromagnetic waves and instabilities in dense astrophysical plasmas, **R. P. Prajapati**, National Conference on Astrophysics, Astronomy & Astrology (*ASTRO-2024*), Odisha Vigyan Mandal, Cuttak, 04<sup>th</sup> Jan. 2024.

## **List of Conferences/Symposia/Workshops attended [No. – 42]:**

### **A. International [21]:**

#### **Outside India:**

1. 24<sup>th</sup> International Symposium on Plasma Physics and Technology (SPPT-2010), Czech Technical University, Prague, Czech Republic from 14-17 June 2010.
2. Joint ICTP/IAEA workshop on Dense Magnetized Plasma and Plasma Diagnostics, The Abdus Salam ICTP, Trieste (Italy) from 15-26 November 2010.
3. 6<sup>th</sup> International Conference on Physics of Dusty Plasma (ICPDP-2011) at Garmisch-Partenkirchen organized by Max Planck Institute for Extraterrestrial Physics, Garching Germany) from 16-20 May 2011.
4. 23<sup>rd</sup> International Toki Conference on Large Scale Simulations in Fusion Science and Plasma (ITC-23), National Institute for Fusion Science, Gifu, Japan, 18-21 Nov. 2013.
5. 18th International Congress on Plasma Physics (ICPP-2016), Kaohsiung, Taiwan, June 27-July 01, 2016.
6. COMAC Workshop, Chiang Mai, Thailand, 21-25, November 2016.
7. 13<sup>th</sup> Joint APPC-AIP Conference at Brisbane, Australia 4-8, December 2016.
8. 2<sup>nd</sup> BRICS Young Scientist Forum, Hangzhou, China, 11-15, July 2017.
9. 4<sup>th</sup> ASEAN School on Plasma and Nuclear Fusion (ASPNF-2018), Chiang Mai University, Chiang Mai (Thailand), 29 Jan-03 Feb 2018.
10. 2<sup>nd</sup> Asia Pacific Plasma Conference (AAPPS-DPP-2018), Kanazawa (Japan), 12-17 Nov. 2018.
11. 14<sup>th</sup> Asia Pacific Physics Conference (APPC-2019), AAPPS and Institute of Physics Malaysia, 17-21 November (2019).
12. 20<sup>th</sup> International Congress on Plasma Physics (ICPP-2022), HICO, Gyeongju, South Korea, 27 Nov.-02 Dec. (2022).

#### **Within India:**

13. International Conference on Complex Processes in Plasmas and Nonlinear Dynamical Systems (ICCPNDS-2012), Institute for Plasma Research, Bhat, Gandhinagar (Gujarat), India, 6-9 Nov. 2012.
14. International Symposium on Nonlinear Waves in Fluids and Plasmas, IIT, Delhi, 28-02-2017 to 01-03-2017.

15. 7th International Conference on the Physics of Dusty Plasmas (ICPDP-2014), New Delhi, March 3-7, 2014.
16. 29<sup>th</sup> National Symposium on Plasma Science and Technology & International Conference on Plasma Science and Technology (PLASMA 2014), M. G. University Kottayam, Kerala, 8-11 December 2014.
17. International Conference on Emerging Interfaces of Plasma Science and Technology (EIPT-2015), S. S. in Physics, Vikram University, Ujjain (MP.), 9-10 March, 2015.
18. International Conference on Space and Plasma Science (ICSPS-2015), Govt. Vivekanand PG College, Maihar (M.P.), 22-24, September 2015.
19. 12<sup>th</sup> International Conference on Plasma Science and Applications (ICPSA-2019), University of Lucknow, Lucknow, 11-14, Nov 2019.
20. 2<sup>nd</sup> International Conference on “Plasma Theory and Simulations”, University of Lucknow, Lucknow, 20-22, June 2022.
21. International Conference on “Recent Advances in Mathematical Sciences”, Department of Mathematics, Himachal Pradesh University, Shimla (H.P.), 29 & 30 March, 2023.

**B. National [21]:**

1. 21<sup>st</sup> National Symposium on Plasma Science & Technology, MNIT Jaipur, 19-22 Dec. 2006.
2. National workshop on Fundamentals and Application of Plasma, SATI, Vidisha, 19-24 Feb. 2007.
3. Silver Jubilee All India Young Scientist Conference, MPCST, Bhopal., 23-25 Nov. 2007.
4. 22<sup>nd</sup> National Symposium on Plasma Science & Technology, Ahmedabad, 6-10 Dec. 2007.
5. 23<sup>rd</sup> National Symposium on Plasma Science & Technology, BARC Mumbai, 10-13 Dec. 2008.
6. Madhya Kshetriya Vigyan Sammelan, Govt. M. Home Science & Science College Jabalpur, M.P., 21-22 Feb. 2009.
7. 24<sup>th</sup> M.P. Young Scientist Congress, M.P. Council of Science & Technology Bhopal, M.P., 28 Feb-01 March 2009.
8. 97<sup>th</sup> ISCA Young Scientists Award Programme-2009-10, University of Kerala, Thiruvananthapuram, Kerala, 27<sup>th</sup> October 2009.
9. 24<sup>th</sup> National Symposium on Plasma Science & Technology, NIT Hamirpur (H.P.), 8-11 Dec. 2009.
10. Silver Jubilee M. P. Young Scientist Congress, MPCST Bhopal, M.P., 22-23 Feb. 2010.
11. National Symposium of Recent Advances in Physics, Holker Science College Indore, M.P., 15 Feb 2011.

12. Emerging Interfaces of Physics and Technology (EIPT-2011), S. S. in Physics, Vikram University Ujjain-456010 (M.P.), India, 28-30 March 2011.
13. 26<sup>th</sup> National Symposium on Plasma Science & Technology, BIT, Patna (Bihar), 20-23 Dec. 2011.
14. 32<sup>nd</sup> National Symposium on Plasma Science & Technology, IPR, Gandhinagar (Gujarat), 7-10 Nov. 2017.
15. BRICS YSF Alumni Conclave, National Institute of Advanced Studies (NIAS), Bangalore, 2-4 December 2018.
16. 33<sup>rd</sup> National Symposium on Plasma Science & Technology (PLASMA-2018), Delhi University, New Delhi, 4-7 Dec. 2018.
17. National Conference on Emerging Interfaces of Physical Science and Technology (EIPT-2019), S. S. in Physics, Vikram University, Ujjain M.P., 29-30 Aug. 2019.
18. 3<sup>rd</sup> National Seminar on Nonlinear and Complex Phenomena, Jadavpur University (Kolkata), 18-11, February 2020
19. 36<sup>th</sup> National Symposium on Plasma Science and Technology (PLASMA-2021), BIT, Mesara, Jaipur Campus, 13-15, December 2021.
20. 38<sup>th</sup> National Symposium on Plasma Science and Technology (PLASMA-2023), UPES, Dehradun, 4-8, December 2023.
21. National Conference on Astrophysics, Astronomy & Astrology (ASTRO-2024), Odisha Vigyan Mandal, Cuttak, 04<sup>th</sup> January 2024.

### **Membership of Professional Societies:**

- Life Membership of Plasma Science Society of India (PSSI) (**LM-819**).
- Life Membership of Indian Society of Particle Accelerator (ISPA) (**LM-392**)
- American Geophysical Union, US (**Membership No. 49965**)
- Association of Asia Pacific Physical Societies- Division of Plasma Physics (AAPPS-DPP), Japan (**LM-912**)

### **Academic Responsibilities:**

- **Asstt. Centre Superintendent** for conducting Annual Examination-2012-13 in Jagrani UG College Baradwar, GGV, Bilaspur.
- **Coordinator**, University Science Club, GGV, Bilaspur.
- **Member** Local Organizing Committee, National EIPT-2011 Conference held at S. S. in Physics, Vikram University Ujjain-456010 M.P., India, 28-30 March 2011.
- **Member** in organizing committee of Guru Ghasidas Jayanti programme in GGV Bilaspur.
- **Event Coordinator**, National Science Day Celebration-2012 programme event- popular lecture and inauguration of science club.
- **Examiner** (paper setter), Barkatullah University, Bhopal (M.P.) and Bilaspur University, Bilaspur (C.G.).



- **Member**, Advisory Committee, International Conference on “High Power Coherent Radiation Generation & its Interaction with Matter, SATI, Vidisha, Feb. 12-14 (2016).
- **Assistant Center Superintendent**, Semester Examinations (2016-17, 2017-18, 2018-19), Guru Ghasidas Vishwavidyalaya, Bilaspur C.G and VET Examination 2018-19.
- **Center Superintendent**, Even Semester Examinations (2016-17), Guru Ghasidas Vishwavidyalaya, Bilaspur C.G.
- **Member** in the Scientific Programme Committee of International Conference on Plasma Science and Applications (ICPSA-2019), 11-14 November (2019).
- **Ph.D. Theses Examiner**: IIT Jammu, IPR Gandhinagar, BARC Mumbai, Tezpur University, Tezpur, Vikram University Ujjain, RGPV Bhopal, University of Lucknow.
- **Prime Minister Research Fellowship (PMRF)** Review of Application and Progress Report.
- **Subject Expert 37<sup>th</sup>** M.P. Young Scientist Congress, 2022, MPCOST Chitrakoot Gramoday University Satna.
- **Subject Expert**, Uttarakhand Council of Science and Technology (UCOST) Young Scientists Congress 2021, 2022, 2023. Dehradun, Uttarakhand.
- **Subject Expert 39<sup>th</sup>** M.P. Young Scientist Congress, 2022, MPCOST MITS Gwalior, M. P., 21-23 Feb. 2024.

### **Ph.D. Supervision & M.Sc. Project Guided:**

#### **Ph. D. (Awarded):     02**

- **Surajit Bhakta**: Thesis Title- “Low frequency waves and linear gravitational instability in dusty and quantum plasmas”. (Awarded).
- **Bivash Dolai**: Thesis Title: “Hydromagnetic fluid instabilities in weakly and strongly coupled dusty plasmas”. (Awarded)

#### **Ph. D. (Ongoing):     04**

- |                              |                       |
|------------------------------|-----------------------|
| (i)     Pallab Boro          | (ii) Ravinder Bhambhu |
| (iii)   Vinesh Kumar Sangwan | (iv) Deepak           |

#### **M.Sc. Project Dissertation: 32**

Year	Student Name	Title of the Project
2012	Surajit Bhakta	Study of Hydrodynamic Wave Propagation in Plasma
	Rahul Mukherjee	Study of Dusty Plasma and Analysis of Dust Acoustic Wave
2013	Sisir Kr. Garai	Magnetohydrodynamic (MHD) Wave Propagation in Dense Quantum Plasma
	Santanu Jana	Low Frequency Hydromagnetic Wave Propagation in Plasma
2014	Anupriya Nyayban	Study of Properties of Strongly Coupled Plasma
	Debudutta Chakrabarty	Jeans Instability and Gravitational Collapse
	Bipllab Ballav	Fundamentals of Dusty Plasma and Dust Acoustic Wave (DAW) Propagation
2015	Dibyendu Thakur	Wave propagation in classical and quantum plasmas

	Barun Parui	Properties of Strongly coupled dusty plasma
	Ayon Ganguly	Study of Rayleigh-Taylor instability in strongly coupled and quantum plasma
2016	Tohid Rana	The inhibition of Rayleigh-Taylor instability by rotation
	Ajay Kumar Sao	Analysis of Rayleigh-Taylor instability in strongly coupled plasma
2017	Amit Tiwari	Self-gravitational instability in pressure anisotropy plasma
	B. Yashwant Kumar	Coulomb fission of a dusty plasma in terms of pinching instability
	Archana Rao	Jeans instability in a magnetodusty plasma
2018	Shivangi Gupta	Theoretical and simulation studies of Rayleigh-Taylor instability
	Ranjan KumarSahu	Study of wave propagation in quantum degenerate plasma
	Shubham K. Pati	Coulomb fission of a dusty plasma
2019	Utkalika Palai	Inertial confinement fusion and Rayleigh-Taylor instability in magnetized plasma
	Kaivlya Gupta	Theoretical study of Jeans instability and role of Jeans instability in white dwarf
	Aakash Chatterjee	Effect of viscosity in neutrino magnetohydrodynamic plasma
	Brhamanand Giri	Effect of polarization force and charge gradient force on dust acoustic waves.
2021	Isha Shailesh	Jeans instability in expanding universe with radiation pressure
	Pallab Boro	Kelvin-Helmholtz instability with polarization force in dusty plasma
	Krushna Tulasi	N-Body hydrodynamic simulation of containing dark matter using Gadget-2 code
	Manoj Kumar	Collisional effects on ion-acoustic waves in neutrino plasmas
2022	Tanay Gupta	A Study on dusty plasma physics and the examination of Jeans criteria for milky way
	Koti Kunja	Rayleigh-Taylor instability in compressible plasma
2023	Saloni Kansal	Solar wind plasma interactions
	Rahul	Simulation studies of dusty plasmas
	Ankit	Rayleigh-Taylor instability in non-uniform plasmas
	Bitesh Kumar	Molecular cloud collapse and star formation

**Place: JNU, New Delhi**



**(Dr. Ram Prasad Prajapati)**