

Bio-Data

Dr. R. P. Prajapati

Assistant Professor

(Plasma Physics)

Department of Pure and Applied Physics

Guru Ghasidas Central University

BILASPUR (C.G.)

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Mob: 9826699220

Personal Data:

Name : **Dr. R. P. Prajapati**
Father's name : Shri G. L. Prajapati
Mother's name : Smt. Kamla Prajapati
Sex : Male
Date of birth : 25th June 1982
Nationality : Indian
Religion : Hindu
Marital status : Married



Academic Qualifications:

Ph. D. (Plasma Physics): S. S. in Physics, Vikram University Ujjain M.P. (2010),

Title: "A Study of Hydromagnetic Instabilities of Gaseous Plasma"

Thesis Supervisor: Prof. R. K. Chhajlani

M. Sc. (Physics, with specialization in Digital Electronics): S. S. in Physics, Vikram University Ujjain (71.58%), (2004). (Fifth Position in University Merit List)

B. Sc. (PCM): Madhav Science College, Vikram University Ujjain (63.7%), (2002).

Teaching and Research Experience (8 Years):

- **July- 2011 onwards:** Working as **Assistant Professor** in Dept. of Pure and Applied Physics, Guru Ghasidas Central University, Bilaspur (C.G.).
- **Dec. 2010-July 2011:** Worked as **Post-Doctoral Fellow** in IPR, Gandhinagar.
- **Nov. 2007- Nov. 2010:** Served as **Lecturer (Contract)** in the School of Studies in Physics, Vikram University Ujjain, M. P., India (From 28/11/07 to 22/11/10)
- **March 2007- Nov. 2007:** Served as **Junior Research Fellow** in DST, New Delhi Research Project entitled "A Study of Hydromagnetic Instabilities of Plasma" (From 05/03/07 to 27/11/07).
- **Aug. 2004-Feb 2007:** Served as **Assistant Professor (Guest Faculty)** in Nehru Govt. P. G. College Agar (Malwa) for periods (i) 02/08/2004 to 26/02/2005 (ii) 09/11/2005 to 26/02/2006 (iii) 13/09/2006 to 04/02/2007

Research Interest Areas:

- Dusty (Complex) Plasma and Quantum plasma, Strongly Coupled Plasma
- Fusion theory, Conservative Dissipationless Regularization, MHD instabilities
- Hydromagnetic Waves and instabilities (Jeans, Kelvin-Helmholtz and Rayleigh-Taylor)

Teaching Interest Areas:

- Electrodynamics & Plasma physics, Classical Mechanics, Basic Quantum Mechanics, Communication Electronics

Awards/Fellowship:

- **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 24th National Symposium on Plasma Science and Technology (PLASMA-2009) NIT, Hamirpur (H.P.), 08-11 December 2009.

Academic Achievements:

- Referee for Peer Review of: **Physics of Plasmas** (American Institute of Physics), **Plasma Physics and Controlled Fusion** (IOP, London), **Astrophysics & Space Science** (Springer, Netherlands), **Physica Scripta** (The Royal Swedish Academy of Sciences UK), **Pramana- J. Physics** (INSA & Springer link), **European J. Phys. D** (Springer link).
- Delivered a talk at **ICTP (Trieste, Italy)** on “Hydromagnetic Instabilities in Magnetized Plasmas” during workshop in Nov 2010.
- Presented an oral paper at **Czech Technical University, (Prague, Czech Republic)** during international SPPT-2010 conference in June 2010.

Abroad Visiting:

- **Czech Technical University, Prague (Czech Republic)** in June 2010 to attend 24th International Symposium on Plasma Physics and Technology.
- **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).

List of Research Paper Publications:

A Publications in International Journals: (17)

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). [American Institute of Physics (USA), **Impact Factor – 2.475**].
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) [American Institute of Physics (USA), **Impact Factor – 2.475**].

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 der Zeitschrift für Naturforschung (Germany), **Impact factor – 0.87**].

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), **Impact factor – 1.404**].
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), **Impact factor – 1.088**].
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), [Institute of Physics (UK), **Impact factor – 0.281**].
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). [Institute of Physics (UK), **Impact factor – 0.281**].
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), **Impact factor – 0.510**].
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), **Impact factor – 0.664**].
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), **Impact factor – 1.088**].
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), **Impact factor – 0.684**].
12. Effect of pressure anisotropy and flow velocity on Kelvin-Helmholtz instability of anisotropic magnetized plasma using generalized polytropic laws, **R. P. Prajapati** and R. K. Chhajlani, *Physics of Plasmas* **17**, 112108 (2010). [American Institute of Physics (USA), **Impact Factor – 2.475**].

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), **Impact factor –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, **Impact Factor – 2.009**].

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), **Impact factor – 0.281**].

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).
17. Self-gravitational instability in magnetized finitely conducting strongly coupled viscoelastic fluid, **R. P. Prajapati**, and R. K. Chhajlani, *Astrophys. & Space Sci.* **374**, (2013).

B Publications in Proceedings: (03)

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*, Vol. **1397**, pp. 229-230 (2011).
3. Gravitational instability of dusty plasma with radiative process, **R. P. Prajapati** and R. K. Chhajlani, *AIP Conference Proceedings*, Vol. **1397**, pp. 267-268 (2011).

B) Papers presented in conferences/Symposia [9 Oral presentations]:**I. International (07):**

1. Effect of magnetic field on Jeans instability of quantum dusty plasma: application in white dwarf star, **R. P. Prajapati** and R. K. Chhajlani, 24th 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, 6th International Conference on Physics of Dusty Plasma (ICPDP-2011), **Garmisch-Parterkichen, Germany**, 16-20 May 2011.
4. Gravitational instability of dusty plasma with radiative process, R. K. Chhajlani and **R. P. Prajapati**, 6th International Conference on Physics of Dusty Plasma (ICPDP-2011), **Garmisch-Parterkichen, Germany**, 16-20 May 2011.
5. Jeans instability of self-gravitating magnetized strongly coupled plasma, **R. P. Prajapati**, P. K. Sharma, R. K. Sanghvi and R. K. Chhajlani, International Conference on Recent Trends in Physics (ICRTP 2012), **School of Physics, Davi Ahilya Vishwavidyalaya, Indore (M.P.), India**, 4-5 February 2012.
6. 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.
7. Effect of pressure anisotropy on the Jeans instability of quantum magnetohydrodynamic (QMHD) plasma, **R. P. Prajapati** and R. K. Chhajlani, 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.

II. National (22):

2006:

1. Self-gravitational instability of rotating anisotropic heat-conducting plasma, **R. P. Prajapati**, A. K. Parihar, P. K. Sharma and R. K. Chhajlani, 21st National Symposium on Plasma Science & Technology, MNIT Jaipur, India, 19-22 Dec. 2006.
2. Self-gravitating rotating anisotropic pressure plasma in presence of Hall current with generalized polytropic laws, S. Kaothekar, **R. P. Prajapati**, G. D. Soni, S. Goyal and R. K. Chhajlani, 21st National Symposium on Plasma Science & Technology, MNIT Jaipur, India, 19-22 Dec. 2006.

2007:

3. 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.
4. Effect of rotation on Kelvin-Helmholtz instability of two superposed streaming magnetized fluids with suspended dust particles, **R. P. Prajapati** and R. K. Chhajlani, 22nd National Symposium on Plasma Science & Technology, Ahmedabad, India, 6-10 Dec. 2007.
5. Effect of radiative heat-loss function on magnetothermal instability of rotating Hall plasma, **R. P. Prajapati**, P. K. Sharma, R. K. Pensia and R. K. Chhajlani, 22nd National Symposium on Plasma Science & Technology, Ahmedabad, India, 6-10 Dec. 2007.

6. 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.
7. 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.

2008:

8. Kelvin-Helmholtz instability of magnetized plasmas with surface tension and dust particles, **R. P. Prajapati** and R. K. Chhajlani, 23rd National Symposium on Plasma Science & Technology, BARC Mumbai, India, 10-13 Dec. 2008.
9. Kelvin-Helmholtz instability of anisotropic magnetized plasma using generalized polytrope laws, R. K. Chhajlani, **R. P. Prajapati** and A. K. Parihar, 23rd National Symposium on Plasma Science & Technology, BARC Mumbai, India, 10-13 Dec. 2008.

2009:

10. 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](#)).
11. Effects of pressure anisotropy on the Kelvin-Helmholtz instability of collisionless plasma using generalized polytrope laws, **R. P. Prajapati**, 24th M.P. Young Scientist Congress, M.P. Council of Science & Technology Bhopal, M.P. India, 28 Feb-01 March 2009. **(Oral)**
12. Effect of dust particles and flow velocity on Kelvin-Helmholtz instability of magnetized plasmas, **R. P. Prajapati**, 97th ISCA Young Scientists Award Programme-2009-10, University of Kerla, Thiruvananthapuram, Kerla India, 27th October 2009. **(Oral)**
13. Effects of radiative pressure and heat-loss functions on Jeans instability of magnetized self gravitating dusty plasma **R. P. Prajapati** and R. K. Chhajlani, 24th National Symposium on Plasma Science and Technology (PLASMA-09), NIT, Hamirpur (H.P.), 8-11 December 2009.
14. Jeans instability of magnetized quantum dusty plasma, R. K. Chhajlani and **R. P. Prajapati**, 24th National Symposium on Plasma Science and Technology (PLASMA-09), NIT, Hamirpur (H.P.), 8-11 December 2009.
15. Effect of flow velocity and pressure anisotropy on Kelvin-Helmholtz instability of anisotropic plasma using polytrope laws, **R. P. Prajapati** and R. K. Chhajlani, 24th National Symposium on Plasma Science and Technology (PLASMA-09), NIT, Hamirpur (H.P.), 8-11 December 2009 ([Won Buti Young Scientists Award](#)). **(Oral)**

2010:

16. 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)**

2011:

17. 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.

18. 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)**
19. Magnetogravitational instability of finitely conducting strongly coupled plasma, **R. P. Prajapati** and R. K. Chhajlani, EIPT-2011, S. S. in Physics, Vikram University Ujjain (M.P.), 28-30 March 2011.
20. Radiative condensation instability of self-gravitating dusty plasma in presence of polarization force, **R. P. Prajapati** and R. K. Chhajlani, PLASMA-2011, BIT, Patna (Bihar), 20-23 Dec. 2011.
21. Nonlinear stability analysis in conservative regularized hydrodynamics, **R. P. Prajapati**, R. Ganesh, A. Sen, C. Thyagaraja, PLASMA-2011, BIT, Patna (Bihar), 20-23 Dec. 2011.
22. Hydromagnetic instabilities in plasmas, R. K. Chhajlani and **R. P. Prajapati**, PLASMA-2011, BIT, Patna (Bihar), 20-23 Dec. 2011. **(Oral)**

List of Conferences/Symposia/Workshops attended:

A. International [4]:

1. 24th 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. 6th 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. 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.

B. National [15]:

1. 21st 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. 22nd National Symposium on Plasma Science & Technology, Ahmedabad, 6-10 Dec. 2007.
5. 23rd National Symposium on Plasma Science & Technology, BARC Mumbai, 10-13 Dec. 2008.
6. National workshop on General Poor Classes-Welfare and Empowerment, Vikram University Ujjain 22 & 23 Feb 2009.
7. Madhya Kshetriya Vigyan Sammelan, Govt. M. Home Science & Science College Jabalpur, M.P., 21-22 Feb. 2009.

8. 24th M.P. Young Scientist Congress, M.P. Council of Science & Technology Bhopal, M.P., 28 Feb-01 March 2009.
9. 97th ISCA Young Scientists Award Programme-2009-10, University of Kerala, Thiruvananthapuram, Kerala, 27th October 2009.
10. 24th National Symposium on Plasma Science & Technology, NIT Hamirpur (H.P.), 8-11 Dec. 2009.
11. Silver Jubilee M. P. Young Scientist Congress, MPCST Bhopal, M. P., 22-23 Feb. 2010.
12. National Symposium of Recent Advances in Physics, Holker Science College Indore, M.P., 15 Feb 2011.
13. Emerging Interfaces of Physics and Technology (EIPT-2011), S. S. in Physics, Vikram University Ujjain-456010 (M.P.), India, 28-30 March 2011.
14. 26th National Symposium on Plasma Science & Technology, BIT, Patna (Bihar), 20-23 Dec. 2011.
15. Two Days National Workshop cum theme meeting on Accelerator Based Interdisciplinary Research in Basic Sciences, Department of Pure and Applied Physics, Guru Ghasidas Central University, Bilaspur (C.G.), India, 28-29 March 2012.

Membership & Academic Responsibilities:

- Life Membership of Plasma Science Society of India (PSSI).
- Annual Membership of Indian Science Congress Association (ISCA).
- Worked as Building In-charge of Physics-Maths Department.
- 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.
- Coordinator, University Science Club, GGV, Bilaspur.
- Event Coordinator, National Science Day Celebration-2012 programme event- popular lecture and inauguration of science club.
- Member in organizing committee of two Days workshop on Nuclear Accelerators at Dept. of Pure and Applied Physics, GGV Bilaspur.
- Asstt. Centre Superintendent for conducting Annual Examination in Jagrani UG College Baradwar, GGV, Bilaspur.

M. Phil. & M.Sc. Project Students:

M. Phil.: (01)

M. Sc. Project: (06 completed 02 working)

Computer Literacy:

Have a good command in Windows/XP and Linux Operating Systems, MATLAB Programming, Mathematica and Graphics software's.

Dr. R. P. PRAJAPATI