

## **Dr. Prathana Borah**

Assistant Professor

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Dr. P. Borah obtained her M. Sc. in Physics from Tezpur University. She had completed her Ph.D. from Tezpur University on Plasma Physics. The title of her thesis is “**A theoretical study on nonlinearcoherent structures in electron-ion plasma and strongly coupled dustyplasma**”. She has joined as a faculty member of the department of physics since 2021.

### **Publication profile**

1. **Prathana Borah**, Nilakshi Das and Hans Schamel, “*The wavenumber of privileged cnoidal electron and ion holes—a nonlinearly nontrivial parameter*”: **Phys. Plasmas** **25**, 094506 (2018); (doi: 10.1063/1.5051824)
2. Nilakshi Das, **Prathana Borah** and Hans Schamel, “*Free energy and spatial periodicity of generalized cnoidal ion holes*”: **Phys. Lett. A** **382**, 2693-2699(2018) (DOI: 10.1016/j.physleta.2018.06.042).
3. Hans Schamel, Nilakshi Das and **Prathana Borah**, “*The privileged spectrum of cnoidal ion holes and its extension by imperfect ion trapping*”: **Phys. Lett. A** **382**, 168-174(2018) (DOI:10.1016/j.physleta.2017.11.004).
4. Pratikshya Bezbaruah, Pritam Das, **Prathana Borah**, and Nilakshi Das, “*Jeans Instability of Self Gravitating Dust Cloud in Presence of Effective Electrostatic Pressure*”. *Commun. Theor. Phys.* **70**, 209–214 (2018)
5. **Prathana Borah** and Nilakshi Das, “*Effect of electrostatic interaction in the formation of Dust-Acoustic Shock Wave with fluctuating dust charge*”: **Plasma Physics Reports** **44**, 738(2018); (DOI: 10.1134/S1063780X18080020).
6. **Prathana Borah**, Saurav Bhattacharjee and Nilakshi Das, “*Dust Ion Acoustic solitary and shock waves in strongly coupled dusty plasma in*

*presence of attractive interparticle interaction potential.*” **Phys. Plasmas** **23**, 103706 (2016).

7. **Prathana. Borah**, Deepshika Gogoi and Nilakshi Das, “*Role of nonthermal electrons on dust ion acoustic double layer with variable dust charge*”, **Phys. Scr.** **91**, 015603 (2016).

### Book Chapters

1. “**Plasma and its application**”, *Frontiers in High-Density Physics*, ISBN: 978-93-92699-52-8
2. “**Acoustic wave modes in plasma**”, *Frontiers in High-Density Physics*, ISBN: 978-93-92699-52-8
3. “**A review on phase space holes in plasmas**”, *Arena of Matters: A collection of research essays*, ISBN: 978-81-948732-3-5
4. “**Nonlinear coherent structures in collisionless dusty plasma**”, *Infinity*, ISBN: 978-93-89940-96-1

### Presented papers in Conference/Seminar

1. “*Effect of electrostatic potential in the formation of nonlinear coherent structures in complex or dusty plasmas*”, **International Conference on Frontiers in Pure and Applied Physics (ICFPAP-2024)**.
2. “*Nonthermal Plasma: A Sustainable Approach for Pollution Control and Remediation*”, **International Seminar in Environmental Issue and Sustainable Development: The Global and Indian Prospective (ICSSR-2024)**
3. “*Effect of Debye Hückel potential in the formation of Dust acoustic wave with dust charge variation*”, **37<sup>th</sup> National Symposium on Plasma Science & Technology, PLASMA 2022**.
4. “*The role of interaction potential in the formation of electrostatic modes in dusty plasma in presence of nonthermal ions*”, **National Conference on Physical Science (NCPS-2022)**.

5. “*The effect of electrostatic temperature on Dust Acoustic wave mode with fluctuating dust charge*”, **Recent trends in Basic Plasma Research, 2019, CPP-IPR**
6. “*The Cnoidal Ion Hole Spectrum Due To Trapping Nonlinearity*”, **33<sup>rd</sup> National Symposium on Plasma Science & Technology, PLASMA 2018**
7. “*Nonlinear Structures in Strongly Coupled Dusty Plasma*”, **8<sup>th</sup> International Conference on Physics of Dusty Plasma (ICPDP-2017).**
8. “*Formation of Nonlinear Structures in Strongly Coupled Dusty Plasma near Liquid-Solid Transition Region*”, **National Conference on HARD AND SOFT CONDENSED MATTER PHYSICS (NCHSCMP-2017).**
9. DST SEBR School on “Plasma Theory” organized by IASST, Guwahati, from 9-29 November, 2016
10. “*Formation of Nonlinear Structures in a strongly coupled dusty plasma*”, **CPP-IPR Silver Jubilee Symposium 2016.**
11. “*Rarefactive DIA Double layer with fluctuating dust charge*”, **30<sup>th</sup> National Symposium on Plasma Science & Technology, PLASMA 2015.**
12. “*Role of radiation pressure on self diffusion of dust grains in protoplanetary disk*”, **International conference on Interstellar Dust Molecules and Chemistry (IDMC-2014).**

#### Attended Workshop/Symposium

1. Workshop on “**Patent Search and Analysis**”, organized by *Tezpur University Intellectual Property Rights Cell in collaboration with TIFAC, DST, New Delhi*, September-2014.

2. Workshop on “**Computational Aspects of Research in Physics**”, organized by *Department of Physics, Tezpur University and supported by UGC-SAP*, November-2014.
3. Workshop on “**Linear Tokamak Divertor Simulators for PSI Studies, WLTDS-2014**”, organized by *Centre of Plasma Physics-Institute for Plasma Research*, November-2014.
4. Second National Symposium on “**Nonlinear and Complex Phenomena**”, organized by *Institute of Advanced Study in Science and Technology (IASST)*, March-2015.
5. Workshop on “**ASTROSAT Data Analysis**” organized by *Department of Physics, Tezpur University sponsored by IUCAA*, March-2017

#### FIP/FDP

1. Successfully completed the **Online Faculty Induction Programme (FIP)** organized by Teaching Learning Centre, Tezpur University during **03 August-02 September 2021** under **PMMMNTT Scheme of Ministry of Education, Government of India.**
2. Successfully completed One week **National level Faculty Development Programme on Intellectual Property Rights for Academia** from Sept 20<sup>th</sup>, 2021 to Sept 25<sup>th</sup>, 2021 organized by CKB Commerce College in association with IICT-Hyderabad
3. Online Faculty Development Programme on “**Higher Education in the 21st Century in Light of National Education Policy 2020**” organized by E&ICT Academy IIT Guwahati held from 07 – 12 March, 2022 in association with B. Borooah College, Guwahati and with support from Skillgym.
4. **FDP** from 29 June- 03 July, 2022 on **LaTeX** organized by **Mangaldai College** with course material provided by Spoken Tutorial Project, IIT Bombay.

5. One Week International Workshop on “**Academia Research Writing, Copyright & Plagiarism**” organized by N. N. Saikia College Teacher’s Unit in collaboration with Dept of Botany, from 14<sup>th</sup> Nov. -19<sup>th</sup> Nov. 2022.
6. Online weeklong short term training program on “**Enhancing Administrative Skills**” organized by Teaching-Learning Centre, Tezpur University during 24-30 May 2023.
7. Online two week “**Interdisciplinary Refresher Course on Curriculum and Pedagogy**” organized by Teaching-Learning Centre, Tezpur University during 07-20 June 2023.

### Awards

1. UGC Scholarship “**Post-Graduate Merit Scholarship for University Rank Holders for PG Programs**” in the year 2012.
2. UGC Scholarship “**National Fellowship for Students of Other Backward Classes (OBC)**” in the year 2015.

### Extra Activities

1. Life member of **Plasma Science Society of India** from 2018 onwards.
2. Working as an **Assistant professor** in **Arunachal University of Studies, Arunachal Pradesh**
3. Post graduate project on **Neutrino-mass mixing in the year 2012-2013.**
4. **Computer literacy:** Basics of Windows, Mat Lab programming, Latex Programming, Mathematica programming.