



Pranaya Pratik Das

Physics, Research Scholar

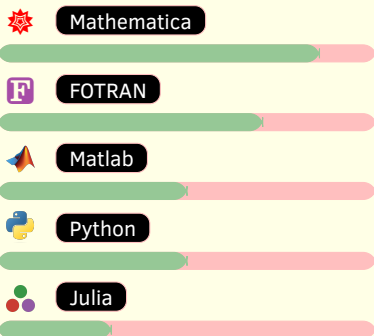
December 22, 1992
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 pranaya_phy@outlook.com

Online Platforms

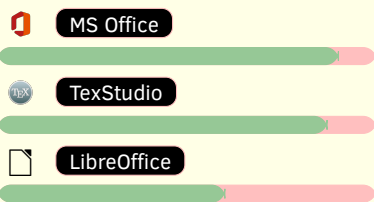
Pranaya Pratik Das
 Pranaya-Das
 0000-0002-6025-7719

Skills

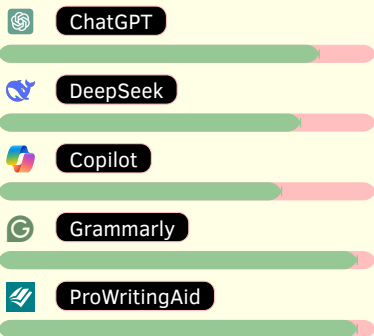
> Programming Software



> Text editing Software



> AI and other tools



> Operating Systems



Education

Study

10th. June 2008 BSE, Odisha
Achievement: with 100% in Mathematics
 +2. Science June 2010 CHSE, Odisha
 B.Sc. in Physics July 2010 – June 2013 BJB Auto. College, Utkal University
 M.Sc. in Physics August 2014 – August 2016 CBSH, OUAT
 Ph.D. in Physics July 2019–2025 NIT Rourkela
Thesis Topic: *Diagnosis of quantum chaos in perturbed quantum wells and billiards*

Awards and Achievements

Scholarships:

- P.G. Meritorious Scholarship (2014-16), Institute of Mathematics and Applications (IMA).
- Medhabruti Scholarship (2014)

Qualified Entrances:

- TIFR (2015-16)
- GATE (2019-21)

Certificates

- IAPT(2012)
- Spring College in the Physics of Complex Systems. *Awarded by ICTP.*
- Secrets of getting published in high impact factor journals. *Awarded by Wiley.*
- Research Scholar Week (2024)

Research & Publications

Recent Publications

- 2025 Vinesh Vijayan, Pranaya Pratik Das, K Hariprasad and P Sathish Kumar. “Cyclically Symmetric Thomas Oscillators As Swarmalators: A model for Active Fluids and Pattern Formation.”
DOI: [arXiv:2211.00336](https://arxiv.org/abs/2211.00336)
- 2025 Pranaya Pratik Das and Biplab Ganguli. “Signature of chaos in perturbed quantum wells”. *Eur. Phys. J. D* (2025) 79 :74
DOI: <https://doi.org/10.1140/epjd/s10053-025-01025-7>
- 2025 Pranaya Pratik Das, Tanmayee Patra, and Biplab Ganguli. “Manifestations of chaos in billiards: the role of mixed curvature”.
DOI: <https://doi.org/10.48550/arXiv.2501.08839>
- 2024 Bhaskar Shukla, Pranaya Pratik Das, David Dudal, and Subhash Mahapatra. “Interplay between the Lyapunov exponents and phase transitions of charged AdS black holes.”. *Phys. Rev. D* 110, 024068
DOI: [10.1103/PhysRevD.110.024068](https://doi.org/10.1103/PhysRevD.110.024068)
- 2022 Vinesh Vijayan, & Pranaya Pratik Das. “Dynamics of a charged Thomas oscillator in an external magnetic field”. *Physica Scripta*, 97(11), 115207.
DOI [10.1088/1402-4896/ac99ab](https://doi.org/10.1088/1402-4896/ac99ab)

Research Interest

- | | | |
|---------------------|------------------------|---------------------|
| Non-linear Dynamics | Quantum Chaos | Billiards Dynamics |
| Chaos Theory | Chaos Diagnostic Tools | Black Hole |
| Classical Chaos | Quantum Scars | BH Phase Transition |

OTOC **Loschmidt Echo** **Lyapunov Exponent** **Chaos** **Poincare Section** **RMT** **SFF**
Billiards **NLSD** **Quantum Scars**

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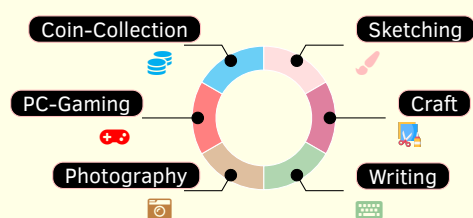
About Me

I am a research scholar specialising in quantum chaos and nonlinear dynamics, with a focus on spectral complexity, scrambling diagnostics, and quantum scars. By collaborating on projects about black hole phase transitions, chaos near black holes, and swarming dynamics of active particles, my work unites many domains,

A Day of My Life



Hobbies



Languages



References

- [1] **Prof. Biplab Ganguli**
Department of Physics and Astronomy,
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- [2] **Prof. Subhash C. Mahapatra**
Department of Physics and Astronomy,
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- [3] **Prof. Mithun Biswas**
Department of Physics and Astronomy,
NIT Rourkela
biswasm@nitrkl.ac.in

Academic Experience

Laboratory

- 💡 **TA in B.Tech Physics Lab (Online)** 2021–2022, Autumn Semester Prof. P. Mahanandia
• Conducted various online classes and evaluated copies.
- 💡 **TA in B.Tech Physics Lab (Online)** 2021–2022, Spring Semester Prof. S. K. Bisoi
• Conducted various online classes, seminars and evaluated copies.
- 💡 **TA in B.Tech Physics Lab** 2022–2023, Autumn Semester Prof. I. Banarjee
• Conducted various classes, experiments, evaluated copies and and taken vivas.
- 💡 **TA in B.Tech Physics Lab** 2022–2023, Spring Semester Prof. B. Ganguli
• Conducted various classes, experiments, evaluated copies and and taken vivas.
- 💡 **TA in Thermal Physics Lab** 2022–2023, Spring Semester Prof. B. Ganguli
• Conducted various classes, experiments, evaluated copies and and taken vivas.

Theoretical

- 👤 **Co-supervised a M.Sc. project** 2022–2023 Prof. B. Ganguli
• Successfully co-supervised an M.Sc. project for Karishma Kujur (421PH2125).
• Successfully co-supervised an M.Sc. project for Ayush Sahu (418PH5033).
- 👤 **Co-supervised a M.Sc. project** 2023–2024 Prof. B. Ganguli
• Successfully co-supervised an M.Sc. project for Zubair Ahmad Kumar (422PH2069).
• Successfully co-supervised an M.Sc. project for Vivek Sheoran (422PH2082).

Conferences and Schools

- 🇮🇹 **Spring College in the Physics of Complex Systems** 2021 ICTP, Trieste, Italy
• Attended online
- 🇮🇳 **Complex Lagrangian Problems of Particles in Flows** 2022 ICTS-TIFT, India
• Attended online
- 🇮🇳 **School on Quantum Chaos** 2023 ICTP-SAIFR, São Paulo, Brazil
• Attended online
- 🇯🇵 **Integrability, Deformations and Chaos** 2023 OIST, Onna, Okinawa, Japan
• Attended online
- 🇮🇳 **HPC Symposium** 2024 NIT Rourkela, India
• Poster Presentation
- 🇮🇳 **60 Years of DFT: Advancements in Theory & Computation** 2024 IIT Mandi, India
• Poster Presentation