



# Pranaya Pratik Das

Physics, Research Scholar

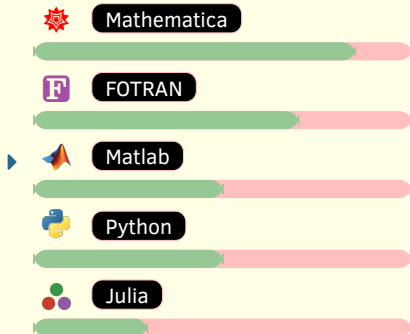
December 22, 1992  
 +91 9040427044  
 pranaya\_phy@outlook.com

## Online Platforms

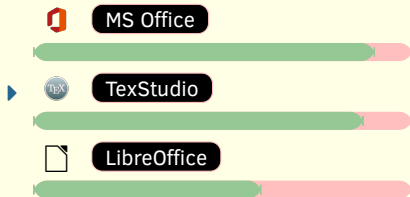
Pranaya Pratik Das  
 Pranaya-Das  
 0000-0002-6025-7719

## Skills

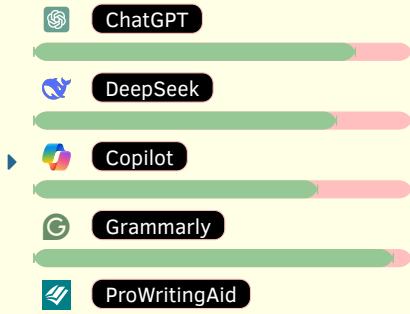
### > Programming Software



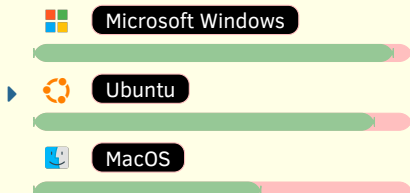
### > Text editing Software



### > AI and other tools



### > Operating Systems



## Education

### Study

10<sup>th</sup>. June 2008 BSE, Odisha  
**Percentage:** 86.125% with 100% in Mathematics

+2. Science June 2010 CHSE, Odisha  
**Percentage:** 69.5%

B.Sc. in Physics July 2010 – June 2013 BJB Auto. College, Utkal University  
**Percentage:** 71.16%

M.Sc. in Physics August 2014 – August 2016 CBSH, OUAT  
**Percentage:** 82.5%

**Thesis Topic:**

Ph.D. in Physics July 2019–2025 NIT Rourkela  
**CGPA:** 8.76

**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 **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, and Pranaya Pratik Das.** “Cyclically Symmetric Thomas Oscillators As Swarmalators: A paradigm for Active Fluids & Pattern Formation.”.  
DOI: [arXiv:2211.00336](https://arxiv.org/abs/2211.00336)
- 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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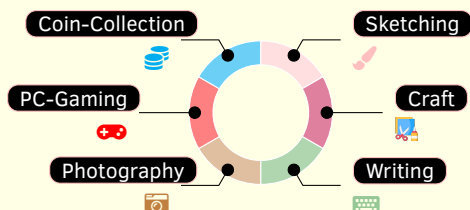
## About Me

I am a research scholar specialising in quantum chaos with a strong background in theoretical physics. My work delves into the interplay between order and disorder in quantum systems. I aim to deepen our understanding of chaotic dynamics in quantum mechanics through quantum ergodicity, semi-classical analysis, diagnostic tools, and random matrix theory. I am committed to advancing the scientific community through innovative research and collaboration.

## A Day of My Life



## Hobbies



## Languages



## References

- [1] Prof. Biplab Ganguli  
Department of Physics and Astronomy,  
NIT Rourkela  
biplabg@nitrkl.ac.in  
biplab62g@gmail.com

## 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