



# DEBDATTA BANERJEE

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Integrated PhD Scholar (2020 - Present)

Department of Earth Sciences,

Indian Institute of Science Education and Research, Kolkata

## EDUCATION

	Institution	CGPA/Percentage	Year
M.S. coursework	Indian Institute of Science Education and Research, Kolkata	9.46	2020-22
B.Sc. (Physics honours.)	Bethune College (University of Calcutta)	87.75%	2017-20
XII (ISC)	St. Joseph's Convent, Chandannagar	94.7%	2017
X (ICSE)	St. Agnes' Convent School, Howrah	95.8%	2015

## RESEARCH EXPERIENCE

- **Application of first principles calculations in astronomical silicates and planetary minerals (2023 - Present)**  
Mentor : Dr. Swastika Chatterjee (IISER Kolkata)
- **Electronic structure study of double perovskite materials (2022 - Present)**  
Mentor : Dr. Swastika Chatterjee (IISER Kolkata)
- **Jarosite: a possible indicator for the history of temperature spikes on Martian surface (June 2022 - 2023)**  
Mentor : Dr. Swastika Chatterjee (IISER Kolkata)  
(Manuscript under preparation)
- **A first principles study of high pressure polymorphs of Albite and elastic properties of Lingunite (2020 - 2022)**  
Mentor : Dr. Swastika Chatterjee (IISER Kolkata)
- **Some experimental techniques in Condensed Matter Physics and Nuclear Physics (October 2019)**  
Mentors: Dr. S.S Ghugre, Dr. P.V Rajesh, Dr. Rajib Mondal, Sri Kaushik Basu, Dr. R. Raut (UGC-DAE-CSR, Kolkata)

## RESEARCH INTERESTS

- Studying the different material properties of planetary minerals with the help of density functional theory.
- Exploring the mineralogical fingerprints of the interstellar medium with the help of ab-initio molecular dynamics simulation and first principles density functional theory.
- Applications of advanced computational techniques like AI/ML, genetic algorithm, etc., to study planetary systems.

## TECHNICAL SKILLS

**Ab-initio packages :** VASP, Quantum ESPRESSO, Gaussian ; **Plotting tools :** XMGrace, GNU Plot, Origin  
**Programming languages :** Python, C, Java, Julia ; **Miscellaneous :** WPS Office, Microsoft Office, ImageJ, L<sup>A</sup>T<sub>E</sub>X, VESTA, GaussView, Shell scripting

## ACHIEVEMENTS / WORKSHOPS / CONFERENCES

- International Conference on Planets, Exoplanets and Habitability, Physical Research Laboratory (February 2024)
- Venus Science Conference, Physical Research Laboratory (September 2023) (virtual)
- Prime Minister's Research Fellowship (Cycle 11) (July 2023 - )
- Early Career Research Award for Best Poster, 4<sup>th</sup> Indian Planetary Science Conference, Physical Research Laboratory, Ahmedabad (2023)
- Indian Symposium on Machine Learning (IndoML), IIT Gandhinagar (December 2022)
- Chhanda Mitra Memorial Prize, Chameli Bose Memorial Prize, Hirendranath Bose and Chameli Bose Memorial Prize, Kamalmani Sharma memorial Prize, Special Staff Prize (Bethune College) (2021)
- Qualified IIT JAM (Physics) (2020) ; State Topper - NGPE (National Graduate Physics Examination) - IAPT (2020)
- Online certificate course on Learning Physics through simple experiments and Advanced Course on Special Theory of Relativity by Prof. H.C.Verma, IIT Kanpur (2020)
- C.K. Majumdar Memorial Workshop on experimental Physics (December 2017, March 2019, December 2020)

## TEACHING ASSISTANTSHIPS AT IISERK

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- Mineral Physics (Spring 2022)
- Programming in Python (Fall 2022)
- Introduction to computer programming (Fall 2021, Fall 2023)

Swastika Chatterjee  
20/2/24.