

Chandan Kumar Sahu

Integrated MSc. - School of Physical Sciences
National Institute of Science Education and Research (NISER)

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EDUCATION

- **2019-24** - Five year Int. MSc. at NISER Bhubaneswar (with Major in Physics and Minor in Chemistry) and a CGPA of 8.83/10 up to 4th year.
- **2016-18** - Senior secondary education from Kendriya Vidyalaya Gopalpur Military Station ([KVGMS](#)), Odisha (*with 90.2% in 12th grade*)

RESEARCH INTERESTS

- Interior structure and composition of exoplanets.
- Time evolution of exoplanetary interiors.
- Exoplanetary atmospheres and their evolution.

MASTERS THESIS (ONGOING)

Unveiling the physics of rocky exoplanet interiors and atmospheres using the JWST

Supervisor - [Dr. Liton Majumdar](#)

[Exoplanets and Planetary Formation Group](#), School of Earth and Planetary Sciences, NISER

- Developing an in-house model to simulate the structure as well as the evolution of terrestrial exoplanets, with special highlights on Earth-like composition exoplanets.
- Coupling the interior with atmosphere and studying the effects of interior evolution on the atmosphere.
- Analysing the detectability of these rocky planet atmospheres using JWST.

FORMER PROJECTS AND RESEARCH EXPERIENCE

- **Element partitioning in natural grains** (*Jan 2024 - Present*)
Study of element partitioning and diffusion in natural grains as a function of time.
Supervisor - [Dr. Priyadarshi Chowdhury](#) and [Dr. Subhasis Basak](#)
School of Earth and Planetary Sciences and School of Physical Sciences, NISER
- **Modeling the interior evolution of rocky exoplanets using machine learning** (*Jan - May 2023*)
Predicting the evolution of terrestrial exoplanet interiors using machine learning recurrent neural networks (RNN) in SciKit-Learn, with [VPLANET](#) outputs as training data.
Supervisors - [Dr. Subhankar Mishra](#) and [Dr. Liton Majumdar](#)
School of Computer Sciences and School of Earth and Planetary Sciences, NISER
- **Atmospheric Clouds and precipitation - A statistical analysis** (*Summer 2022 - Present*)
Studying the impact of cloud base heights on precipitation over Ahmedabad.
Supervisor - [Dr. Som Kumar Sharma](#)
Space and Atmospheric Sciences Division, Physical Research Laboratory (PRL), Ahmedabad
- **Direct Imaging of Exoplanets** (*Aug 2022 - Dec 2022*)
Reading project on understanding the theory and observations behind directly imaged exoplanets.
Supervisor - [Dr. Luke R. Chamandy](#)
School of Physical Sciences, NISER
- **Atmospheric retrieval of exoplanets** (*Dec 2021 - May 2022*)
Literature review on exoplanetary atmospheres and their retrieval.
Supervisor - [Dr. Liton Majumdar](#)
[Exoplanets and Planetary Formation Group](#), School of Earth and Planetary Sciences, NISER

TECHNICAL SKILLS

- **Coding:** Python (proficient), C++, LaTeX, MATLAB
- **Codes and models used/worked with:** [VPLANET](#) (multipurpose software for planetary system evolution), [PACMAN](#) (coupled geochemical evolution model for exoplanets), [MAGRATHEA](#) (planet interior structure code), [EXOPLEX](#) (self-consistent mass-radius-composition calculator)

AWARDS/ACHIEVEMENTS

- **DISHA (DAE Incentive Scheme for Holistic Science Education and Augmentation)** - 5 year scholarship for undergraduate studies, by [Department of Atomic Energy \(DAE\)](#), Government of India.
- All-India rank 560 in GATE Physics 2023 (Graduate Aptitude Test in Engineering)
- Summer Research Fellow 2022 at [Physical Research Laboratory \(PRL\)](#), Ahmedabad, India.
- Received merit certificate in National Graduate Physics Examination (NGPE) 2020 organised by [Indian Association of Physics Teachers \(IAPT\)](#).
- Won bronze medal in National Quiz Competition 2020 organized by [Aryabhata Science Club](#).
- Won silver medal in National Science Olympiad (NSO) 2017.

CONFERENCES AND WORKSHOPS ATTENDED

- **Presented a talk** at [Strange New Worlds Conference](#) in August 2023 at IISER Pune, India.
- Attended the National Workshop on Coronal Mass Ejections, August 2022, at CUTM Bhubaneswar, India.
- Attended the [VPLANET](#) virtual workshop in July 2022.
- Selected for Introductory Summer School in Astronomy and Astrophysics ([ISSAA](#)) in June 2022 at IUCAA Pune, India.
- Attended [RAD@Home](#) Radio Astronomy Workshop 2019 at IISER Berhampur, India.

TALKS/POSTERS PRESENTED

- Presented a talk on '*Exploring the interior of rocky exoplanets: From magma oceans to structured planets*' at Strange New Worlds Conference in August 2023 at IISER Pune, India.
- Presented a talk on '*Surfing through exoplanets*' in November 2022 on behalf of NISER Astronomy Club.
- Presented a talk on '*Unravelling the mysteries inside rocky exoplanets*' in October 2022, NISER.
- Presented a talk on '*NASA Perseverance mission*' in March 2021 on behalf of NISER Astronomy Club.
- Poster and model presentation on '*Gravitational lensing*' for [Dark Matter Day](#) 2019 at NISER.

LEADERSHIP/RESPONSIBILITIES

- **President of the NISER Astronomy Club** - Served as the elected president of the [NISER Astronomy Club](#) (April 2022 - July 2023)
- Tutored senior secondary school students of JNV Dhenkanal as a part of [AVANTI](#) mentorship programme in 2019.
- Presented model on '*Sustainable energy and management*' as the team leader at Regional Science Exhibition 2018, Bhubaneswar.
- Team leader at the [National Children Science Congress](#) 2017, Vishakhapatnam.

OTHER ACHIEVEMENTS

- **National exams qualified:** GATE Physics, NEST (National Entrance Screening Test), JEE (Joint-Entrance Exam) Mains
- Developed a VHDL algorithm for muon detection experiment and performed heterodyne detection for sound waves as a part of LIGO analogy experiment in 2022-23.
- Participated in Inter-IISER Sports Meet 2019 through the NISER basketball team.
- **At NISER Astronomy Club**
 - Telescope handler and trainer: 6" and 8" Newtonian and 11" Schmidt-Cassegrain telescopes.
 - Volunteered for student sessions and outreach events for NISER Astronomy Club talks, cultural events, and astronomical events.
 - Proposed for the establishment of an in-house telescope observatory at NISER.

LANGUAGE PROFICIENCY

- English (**TOEFL Score 102**)
- Hindi
- Odia (native)

- [Dr. Liton Majumdar](#)
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Reader-F
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- [Dr. Luke Robert Chamandy](#)
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