

SHUBHONKAR PARAMANICK

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EDUCATION

May '23 to date **Ph.D. Candidate, Astrophysics**
University of Rochester, Rochester, New York, USA

Aug. '21 – May '23 **Master of Arts, Physics and Astronomy**
University of Rochester, Rochester, New York, USA

Relevant Courses : Astrophysics I & II (Astrophysical Fluid Dynamics), Plasma Physics, Stellar Structure and Atmospheres, High Energy Astrophysics, Quantum Mechanics, Electromagnetic Theory, Statistical Mechanics, Modern Statistics & Exploration

Aug. '13 – May '17 **Bachelor of Technology, Physical Sciences**

Indian Institute of Space Science and Technology (IIST), Thiruvananthapuram, Kerala, India

Relevant Courses : Atmospheric Physics, Planetary Science, Radiation Processes in Astrophysics, Introduction to Astronomy and Astrophysics, Electromagnetic Theory and Relativity, Quantum Mechanics, Statistical Mechanics

○ Cumulative GPA : 8.91/10

○ Department Rank : 2

WORK EXPERIENCE

May '22 to date **Graduate Research Assistant**
University of Rochester, Rochester, USA

Aug. '17 – June '21 **Scientist/Engineer ‘SC’**
U R Rao Satellite Centre, Bangalore, India
Indian Space Research Organization (ISRO)
Department of Space, Government of India

TEACHING EXPERIENCE

Jan. '22 – May '22 **Graduate Teaching Assistant**
PHYS114 (Electricity & Magnetism)
University of Rochester, Rochester, USA

Aug. '21 – Dec. '21 **Graduate Teaching Assistant**
PHYS113 (Principles of Mechanics)
University of Rochester, Rochester, USA

RESEARCH INTERESTS

Turbulent rotating convection and origin of stellar and planetary magnetism, Tidal deformation in exoplanets; Electromagnetic star-planet interactions; Effects of stellar winds on planetary atmospheres; Atmospheric escape processes; Stellar and planetary wind mixing in magnetotail

PEER REVIEWED JOURNAL ARTICLES

- **Shubhonkar Paramanick**, Eric G. Blackman, Jonathan Carroll-Nellenback, and John A. Tarduno. Terrestrial atmospheric ion implantation occurred in the nearside lunar regolith during the history of Earth’s dynamo. *Nature Communications Earth & Environment*, 6(1001): 1 – 20, December 2025. doi: 10.1038/s43247-025-02960-4. URL <https://www.nature.com/articles/s43247-025-02960-4>. Reference No.: 1001.
- **Shubhonkar Paramanick**, V.J. Rajesh, M.N. Praveen, K.S. Sajinkumar, and Satadru Bhattacharya. Spectral and Chemical Characterization of Copiapite and Rozenite: Implications for Mars Exploration. *Chemical Geology*, 120043: 1 – 23, December 2020. doi: 10.1016/j.chemgeo.2020.120043. URL <http://www.sciencedirect.com/science/article/pii/S0009254120305829>. Reference No.: CHEMGE 120043.

ARTICLES UNDER PREPARATION

- **Shubhonkar Paramanick**, Eric G. Blackman, Jonathan Carrol-Nellenback, Atma Anand. Flow redirection by ordered stellar magnetic fields as a possible explanation for absorption lines from hot gas giants incurring photo-evaporative mass loss.
- **Shubhonkar Paramanick**, Eric G. Blackman, John A. Tarduno. Post-Hadean terrestrial ionospheric volatile deposition on the Moon indicates the geodynamo is old and long-lived.

OTHER KEY REFEREED CONTRIBUTIONS [NASA ADS]

- **Paramanick, Shubhonkar***, Eric G. Blackman, and John A. Tarduno (2025). Evolutionary constraints on the solar wind transition epoch and the duration of the terrestrial unmagnetized phase using lunar volatiles deposited from Earth's exosphere. *EPSC-DPS Joint Meeting, Helsinki, Finland. Contrib. No. EPSC-DPS2025-1371*. URL <https://doi.org/10.5194/epsc-dps2025-1371>. Oral Presentation.
- **Paramanick, Shubhonkar***, Eric G. Blackman, Jonathan Carroll-Nellenback, and Atma Anand (2025). Flow redirection by ordered stellar magnetic fields as a possible explanation for broad absorption lines from hot gas giants incurring photo-evaporative mass loss. *246th Meeting of the American Astronomical Society, Anchorage, Alaska. Contrib. No. 117.02*. URL <https://doi.org/10.3847/25c2cfef.db75f3fa>. Oral Presentation.
- **Paramanick, Shubhonkar***, Eric G. Blackman, and John A. Tarduno (2025). Constraints on age and persistence of the geomagnetic field using lunar volatiles implanted from the terrestrial atmosphere. *56th Lunar and Planetary Science Conference, LPI, Texas. LPI Contrib. No. 2514, Volume: 56, #2514*. URL <https://www.hou.usra.edu/meetings/lpsc2025/pdf/2514.pdf>. Oral Presentation.
- **Paramanick, Shubhonkar***, Eric G. Blackman, Jonathan Carroll-Nellenback, and John A. Tarduno (2024). Explaining lunar regolith volatile abundances from solar wind and Earth atmosphere material implanted via magnetotail plasma. *45th Committee on Space Research Scientific Assembly, Busan, South Korea. D1.4-0005-24, pp. 151*. URL <https://app.cospar-assembly.org/2022/browser/presentation/33702>. Oral Presentation.
- **Paramanick, Shubhonkar***, Eric G. Blackman, Jonathan Carroll-Nellenback, and John A. Tarduno (2023). Investigating the influence of an unmagnetized versus magnetized Earth on the relative solar wind and Earth atmosphere contributions to lunar soil. *55th Annual Meeting of the Division for Planetary Sciences, San Antonio, TX. 215.04*. URL <https://ui.adsabs.harvard.edu/abs/2023DPS....5521504P/abstract>. Oral Presentation.
- Jaiswal, Bhavesh, [et al., including **Paramanick, Shubhonkar**] (2020). Spectro-polarimetric Signatures of Earth in Near-Infrared: A Science Case. Submitted. *AAS/AGU/AFS Meeting Abstracts 2020: Habitable Worlds 2021. Nexus for Exoplanet System Science (NExSS)*. URL <https://aas.org/meetings/aastcs8/habitable>.
- **Paramanick, Shubhonkar***, V.J., Rajesh; Praveen, M. N.; K. S., Sajin Kumar; Bhattacharya, Satadru (2018). Spectral and Chemical analyses of probable Martian analogue minerals, Copiapite and Rozenite: Implications for hydration processes on Mars. *42nd Committee on Space Research Scientific Assembly, Pasadena, CA. B4.1-0023-18, pp. 441-442*. URL <http://adsabs.harvard.edu/abs/2018cosp...42E2580P>. Oral, and Poster Presentation.
- **Paramanick, Shubhonkar***; V.J., Rajesh, Praveen, M. N.; K. S., Sajin Kumar (2018). Spectral Characterization of Copiapite and Rozenite and its implications. *49th Lunar and Planetary Science Conference, LPI, Texas. LPI Contrib. No. 2083, Volume: 49, #2299*. URL <https://www.hou.usra.edu/meetings/lpsc2018/pdf/2299.pdf>.

CONFERENCE PRESENTATIONS

- EPSC-DPS Joint Meeting 2025, Helsinki, Finland. September 2025.
- 246th American Astronomical Society Meeting, Anchorage, AK, USA. June 2025.
- 56th Lunar and Planetary Science Conference, Lunar and Planetary Institute, The Woodlands, TX, USA. March 2025.
- 45th Committee on Space Research Scientific Assembly, Busan, South Korea. August 2024.
- 55th Annual Meeting of the Division for Planetary Sciences, San Antonio, TX, USA. October 2023.
- Sagan Exoplanet Summer Meeting, California Institute of Technology, Pasadena, CA, USA. July 2023 (Poster).
- 42nd Committee on Space Research Scientific Assembly, Pasadena, CA, USA. August 2018.
- 49th Lunar and Planetary Science Conference, Lunar and Planetary Institute, The Woodlands, TX, USA. March 2018.

SELECTED AWARDS AND HONORS

- Awarded the *Frank J. Horton Graduate Research Fellowships* from the Laboratory for Laser Energetics, 2022 to date.
- Received the *Tamor Travel Grant* from the Department of Physics and Astronomy for EPSC-DPS 2025 (\$1300).
- Awarded the *FAMOUS Travel Grant* from the American Astronomical Society for AAS-246 (\$1000).
- Awarded the *COSPAR Travel Grant* from the Committee on Space Research for COSPAR-2024 (£800).
- Received the *Tamor Travel Grant* from the Department of Physics and Astronomy for COSPAR-2024 (\$1200).
- Awarded the *OWL Grant* from the Other Worlds Laboratory at UCSC for the Exoplanet Summer Program, 2023 (\$1700).

- Awarded the *Hartmann Travel Grant* from the American Astronomical Society for the 55th Annual DPS Meeting, 2023 (\$ 650).
- Awarded the *Sagan Travel Grant* from the NASA Exoplanet Science Institute for the 2023 Sagan Exoplanet Meeting (\$ 600).
- Awarded the *IIST Academic Scholarship*, 2013-2017 — funded by the Department of Space, Government of India.
- Awarded the *Summer Research Fellowship* by the Jawaharlal Nehru Centre For Advanced Scientific Research, Bangalore, in 2016.
- Awarded the *Vacation Students' Programme Fellowship* by IUCAA, Pune, in 2016.
- Received the *INSPIRE Scholarship* from the Department of Science and Technology, Government of India, for the year 2013.

SELECTED ADDITIONAL TRAINING

- Other Worlds Laboratory Summer Program at UC Santa Cruz (2023). Instructor: Prof. Ruth Murray-Clay. Mode: In-person (2 weeks). Skills developed: Advanced methods in computational magnetohydrodynamics and development of a scientific project.
- SHIELD Summer School at Boston University (2024). Mode: In-person (1 weeks). Skills acquired: Plasma processes at the edge of the solar system, Heliophysics.

SKILLS

- **Programming Languages** : C, C++, Python, MATLAB, Fortran, IDL, JavaScript, Perl.
- **Markup Languages** : \LaTeX , HTML5, CSS, Sass.
- **Operating Systems** : Linux, Windows, Mac OS (X).
- **Applications/Astronomy Packages** : Dedalus, AstroBEAR, VisIt, Astropy, Mathematica, Git, AIPS, CASA, CIAO, HEASoft, SAOImage DS9, IRAF, MayaVi, Adobe Illustrator, SimuLink, Mupad, Matplotlib, Gnuplot, Microsoft Office Suite.
- **Computer Graphics/Animation Software** : Blender.

PROFESSIONAL AFFILIATIONS

- Member of the American Physical Society & APS Topical Group in Plasma Astrophysics (APS ID: 62156375).
- Member of the American Astronomical Society (Member ID: 69226).
- Life Member of the Astronomical Society of India (Membership No.: L2321).
- Member of the Society for Industrial and Applied Mathematics (Member No.: 021018954).
- Member of The Planetary Society (Membership ID: 762883).

ACADEMIC OUTREACH AND PROFESSIONAL SERVICE

- Assisted at the University of Rochester Eclipse Festival (PASSAGE Team).
- Volunteered at the Perseid Watch Party at the Rochester Museum & Science Center and Planetarium.

REFERENCES

DR. ERIC BLACKMAN, Professor
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