SHUBHONKAR PARAMANICK

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https://github.com/Shubhonkar-Paramanick

EDUCATION

Aug. 2021 to date

Graduate Student, Physics and Astronomy
University of Rochester, Rochester, New York, USA
Relevant Courses : Astrophysics I & II, Plasma Physics, Stellar Structure and Atmospheres, Quantum Mechanics, Electromagnetic Theory, Modern Statistics & Exploration, Statistical Mechanics

Aug. 2013 – May 2017

Bachelor of Technology, Physical Sciences
Indian Institute of Space Science and Technology (IIST), Thiruvananthapuram, Kerala, India
Relevant Courses : Radiation Process in Astrophysics, Introduction to Astronomy and Astrophysics, Electromagnetic Theory and Relativity, Quantum Mechanics, Statistical Mechanics

- Cumulative GPA : 8.91/10
- Department Rank : 2

RESEARCH INTERESTS

Magnetic star-planet interactions; Effects of stellar winds on the evolution, and habitability of exoplanets; Atmospheric escape processes; Orbits and dynamics.

TEACHING EXPERIENCE

Jan. 2022 – May 2022

Graduate Teaching Assistant
PHYS114 (Electricity & Magnetism) Workshops
University of Rochester, Rochester, USA

Aug. 2021 – Dec. 2021

Graduate Teaching Assistant
PHYS113 (Introduction to Mechanics) Workshops
University of Rochester, Rochester, USA

WORK EXPERIENCE

May 2022 to date

Graduate Research Assistant
University of Rochester, Rochester, USA

Aug. 2017 – June 2021

Scientist/Engineer 'SC'
U R Rao Satellite Centre, Bangalore, India
Indian Space Research Organization (ISRO)
Dept. of Space, Government of India

KEY PROJECTS

- Study of Habitable Planet Earth (SHAPE): Earth as an Extrasolar Planet
- Aditya - L1 — First Indian mission to study the Sun

CURRENT PROJECTS

May 2022 to date

Research Project
Advisors: Prof. Eric G. Blackman, Prof. Jonathan Carrol-Nellenback, Prof. John Tarduno, University of Rochester, Rochester

- Title : *Mass flux transport to the lunar nearside regolith through the terrestrial magnetotail plasma: Constraining the age of geomagnetic field*
- Developed MHD models of the atmospheric mass loss from an unmagnetized planet and a terrestrial magnetosphere caused by an impinging stellar wind using AstroBEAR to study the evolution of planet's dynamo and atmosphere.

Jan. 2023 to date

AST453 Course Project

Advisors: Prof. Eric G. Blackman, Prof. Petros Tzeferacos, University of Rochester, Rochester

- Title : *'Turbulent Correlation Scales' for Mixing-Length Theory of Fast Rotating Convection in Main Sequence Stars*
- Aim to develop a unified generalized framework/model by establishing the relation between the isotropic, inertial-range Kolmogorov, and convective scales in rapidly rotating stars.

OTHER KEY PROJECTS

Jan. 2022 – May 2022

AST462 Course Project, Advisor: Prof. Eric G. Blackman, U of R, Rochester

- Title : *Role of planetary dynamos/B–fields in planetary atmosphere protection*

July 2020 – Oct. 2020

Research Project

- Title : *Analytical and numerical calculation of the Rossiter – McLaughlin effect for transiting exoplanetary systems: Perturbative expansion & comparison with simulated and actual data*

Sep. 2020 – May 2021

Research Project, Advisor: Dr. Arvind Singh Rajpurohit, PRL, Ahmedabad

- Title : *Study of thermal emission from the transiting exoplanet WASP-12b*

May 2016 – July 2016

Junior Thesis & Student Intern, Advisor: Dr. Neeraj Gupta, IUCAA, Pune

- Title : *Kinematic Modelling of Galaxies through HI 21–cm Line Observations*

Dec. 2016 – May 2017

Senior Thesis, Advisor: Dr. V. J. Rajesh, IIST, Trivandrum

- Title : *Spectral and chemical characterization of Copiapite and Rozenite: Implications for hydration processes on Mars*

PEER REVIEWED JOURNAL ARTICLES

- **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. In Press, Reference No.: CHEMGE 120043.

ARTICLES UNDER PREPARATION

- **Shubhonkar Paramanick**, Eric G. Blackman, Jonathan Carrol-Nellenback, John A. Tarduno. Mass flux transport to the lunar nearside regolith through the terrestrial magnetotail plasma: Constraining the age of geomagnetic field.

OTHER REFEREED CONTRIBUTIONS [ADS]

- Jaiswal, Bhavesh; [et al., including **Paramanick, Shubhonkar**] (2020). Spectro-polarimetric Signatures of Earth in Near-Infrared: A Science Case. Submitted. *AASTCS 8: 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.

PROFESSIONAL PRESENTATIONS

- 42nd Committee on Space Research Scientific Assembly, Pasadena, CA, USA. August 2018.
- 49th Lunar and Planetary Science Conference, Lunar and Planetary Institute, TX, USA. March 2018.

SKILLS

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

AWARDS AND HONORS

- Received the *Frank J. Horton Graduate Research Fellowships* from the Laboratory for Laser Energetics, 2022-2023.
- Awarded *IIST Academic Scholarship*, 2013-2017 — funded by the Department of Space, Government of India.
- Awarded *Summer Research Fellowship* by the Jawaharlal Nehru Centre For Advanced Scientific Research, Bangalore, in 2016.
- Awarded *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.

PROFESSIONAL AFFILIATIONS

- Member of the American Physical Society & APS Topical Group in Plasma Astrophysics (APS Account Number: 62156375).
- Life Member of the Astronomical Society of India (Membership No.: L2321).
- Member of the American Astronomical Society (Member ID: 69226).
- Member of The Planetary Society (Membership ID: 762883).

ADVISOR'S CONTACT DETAILS

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University of Rochester,
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Rochester, NY, USA — 14620.
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