

## Ishan Mishra

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**Research Interests:** Planetary Science, Spectroscopy and Photometry of Planetary Surfaces in the Solar System and Beyond

### Career & Education

- JPL Postdoctoral Fellow October 2022 - present  
*Jet Propulsion Laboratory, California Institute of Technology, USA*
- PhD in Astronomy August 2022  
*Cornell University, USA*
- M.S. in Astronomy February 2020  
*Cornell University, USA*
- B.Tech. in Electronics & Communications Engineering May 2016  
*Indian Institute of Technology, Guwahati, India*

### Honors and Awards

- OPAG Meeting Early Career Travel Stipend, *USRA* 2022
- Graduate Conference Grant, *Cornell University* 2018, 2021
- Future Investigators in NASA Earth and Space Science and Technology (FINESST) 2020
- Research Travel Grant (suspended due to COVID-19), *Cornell University* 2020
- Carl Sagan Institute Travel Grant, *Cornell University* 2018, 2020
- Other Worlds Lab Summer Research Fellowship, *U.C. Santa Cruz* 2019
- Summer Research Fellowship, *Academia Sinica Institute of Astronomy and Astrophysics, Taiwan* 2016
- KVPY fellowship (declined), *Indian Academy of Sciences* 2011

### Peer-Reviewed/Refereed Publications

- **Mishra, I.**, Dhingra, R., Buratti, B., Seignovert, B., & White, O. L., *Investigating the extent of bladed terrain on Pluto via photometric surface roughness*, 2023, *in review*, Geophysical Research Letters
- Buratti, B. J., Pittichova, J., **Mishra, I.**, & 11 co-authors, *Pre-impact albedo map and photometric properties of Dimorphos from DART and ground-based data*, 2023, *in review* at Planetary Science Journal
- First, E., **Mishra, I.**, & 4 co-authors, *Mid-infrared spectra for basaltic rocky exoplanets*, 2023, *in review* at Nature Astronomy
- **Mishra, I.**, Lewis, Lewis, N., Lunine, J., Hand, K. P., *An Assessment of Organics Detection and Characterization on the Surface of Europa with Infrared Spectroscopy*, 2023, *in review* at Planetary Science Journal
- **Mishra, I.**, Lewis, N., Lunine, J., Hand, Kevin P., Helfenstein, P., Carlson, R.W., & MacDonald, R.J., *A comprehensive revisit of select Galileo/NIMS observations of Europa*, 2021, Planetary Science Journal 2, 183.
- **Mishra, I.**, Lewis, N., Lunine, J., Helfenstein, P., MacDonald, R.J., Filacchione, & G., Ciarniello, M., *Bayesian analysis of Juno/JIRAM's NIR observations of Europa*, 2021, Icarus 357, 114215.
- Lewis, N.K. + 21 co-authors including **Mishra, I.**, *Into the UV: The Atmosphere of the Hot Jupiter HAT-P-41b Revealed*, 2020, The Astrophysical Journal Letters, 902, L19.  
Performed a statistical analysis on a grid of forward models of the transmission spectra of HAT-P-41b's atmosphere.
- Bhattacharya, S., **Mishra, I.**, Vaidya, K., & Chen, W.P., *Disintegration of the Aged Open Cluster Berkeley 17*, 2017, The Astrophysical Journal, 847, 138

Co-led the analysis of imaging data of the open cluster taken by Pan-STARRS survey that revealed its tidal tails.

### Conference Proceedings/Abstracts

- White, J., **Mishra, I.** and Lewis, N., *High Resolution JWST Transmission Spectra and Their Retrievals for GJ1214b*, 2021, American Astronomical Society Meeting Abstracts, 531.03
- Kutsop, N. + 12 co-authors including **Mishra, I.**, *Addressing Diversity, Inclusion, and Values in the Cornell Astronomy Community: The Graduate Students Response*, 2021, AAS/Division for Planetary Sciences Meeting Abstracts, 502.08
- **Mishra, I.**, Lewis, N. and Lunine, J., *Revisiting select Galileo/NIMS observations of Europa with Bayesian inference*, 2020, AAS/Division for Planetary Sciences Meeting Abstracts, 106.01
- Schwamb, Megan E. + 6 co-authors including **Mishra, I.**, *Assessing the Main-Belt Comet Population with Comet Hunters*, 2017, American Astronomical Society Meeting Abstracts, 112.04

### Approved Grants and Observing Proposals

- JWST Cycle 1, 13 hrs, GO 2358 (PI: MacDonald, R.J. + 14 Co-I's including **Mishra, I.**) 2021  
*Revealing the Atmospheric Composition of a White Dwarf Planet*
- Future Investigators in NASA Earth and Space Science and Technology (FINESST) 2020  
Grant Number 80NSSC20K1381 (FI: **Mishra, I.**; PI: Lewis, N.K.)  
*Providing new constraints on Europa's surface composition*

### Select Presentations

- *The utility of photometric roughness in characterizing the physical nature of planetary surfaces (lightening talk)* 2024  
30<sup>th</sup> Meeting of the NASA Small Bodies Assessment Group (SBAG), Tucson, Arizona
- *Decoding the chemical and physical nature of airless planetary bodies: examples from studies of Europa and Pluto (invited talks)*  
Colloquium for Department of Physical and Astronomy, Cal State LA 2023  
Colloquium for School of Earth and Planetary Sciences, NISER, India 2024
- *Europa Clipper: Exploring an Alien Ocean World (invited talks)*  
SPACEweek at Dawson College, Montreal 2023  
Planetary Lunch Seminar, Department of Astronomy, Cornell University 2023
- *How Widespread are the Bladed Terrains on Pluto? (invited talk)*  
New Horizons Science Team Meeting 2023
- *Providing new constraints on Europa's surface composition (invited talks)*  
University of Arizona Origins Seminar Series 2022  
UC Berkeley CIPS Seminar Series 2022  
Yale Exoplanets and Stars Seminar Series 2022  
Carnegie Earth and Planets Laboratory exoplanets seminar 2022

### Outreach/Media

- *Panelist for press event 'NASA's New Horizons: Distant Discoveries in the Outer Solar System'* 2023  
54<sup>th</sup> Lunar and Planetary Science Conference
- *Co-leader of NYS-4H 2021 Challenge: Galactic Quest* 2021-2022  
Hands-on learning projects and workshops conducted virtually for school kids to get them interested in STEM
- *Author for [astrobites.org](http://astrobites.org)* 2020-Present  
Write brief paper summaries accessible to undergraduate level students

### Teaching/Mentoring experience

- *Graduate student mentor for Cornell Astronomy's REU program* Summers 2020 & 2021  
Mentored two undergraduate students in separate projects involving analysis of transmission spectra of super-Earths and reflectance spectra of rocky planetary surfaces respectively.
- *Astronomy Teaching Assistant (ASTRO 2202) (Cornell University)* Fall 2018  
Assisted in teaching students how to write popular science articles, graded written homework and gave

feedback and held office hours.

- *Astronomy Teaching Assistant (ASTRO 1101/1102)* (Cornell University) Fall 2017-Spring 2018  
Taught recitation sections and lab sections that involved exercises on introductory astronomy topics.  
Assisted in writing and grading homework assignments and exams.

**Professional service and affiliations**

- Member of NASA SMD Review Panels 2023-
- Member of the Science Organizing Committee (SOC) of the joint *DPS-EPSC 2023* meeting 2023
- Reviewer for *AAS* Journals and *Icarus* (2 papers reviewed), 2021-
- Graduate student affiliate, *Europa Clipper Mapping and Imaging Spectrometer (MISE) team* 2020-2022
- Postdoctoral Affiliate, *Europa Clipper Project Science team* 2022-