NISHANT MISHRA

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EDUCATION & EXPERIENCE

University of Michigan, Ann Arbor
Ph.D. in Astronomy & Astrophysics — May 2024 - May 2028
M.S. in Astronomy & Astrophysics — Aug 2022 - May 2024
Advisor(s): Sean Johnson (primary)
Thesis committee: Eric Bell, Jinyi Yang, Camille Avestruz (Department of Physics, UM), Gwen Rudie (Carnegie Observatories)

The Observatories of the Carnegie Institution for Science, Pasadena
Visiting Researcher — Jan 2026 - June 2026
Advisor: Gwen Rudie

University of California, Berkeley
B.A. in Physics, Astrophysics (Honors) — Aug 2017 - May 2021
Advisor(s): Uroš Seljak (thesis), Emmanuel Schaan, Martin White

FIRST AND SECOND AUTHOR PUBLICATIONS

Mishra, N., et al., *CUBS+MUSEQuBES: The chemical enrichment properties of the cool circumgalactic medium around star forming dwarf galaxies at* $z = 0.05 - 0.8$, ApJ, in prep.

Mishra, N., et al., *Differential metal enrichment of neutral, dusty gas in circumgalactic medium around dwarf galaxies traced by damped Lyman-*α *absorption at* $z < 1$, ApJ, in prep.

Mishra, N., Avestruz, C., & Johnson, S. D. 2026, *Tracing the environmental quenching of dwarf galaxies in TNG50*, ApJ, submitted

Mishra, N., et al. 2026, *Cosmic Ultraviolet Baryon Survey (CUBS) XI: Enriched multi-phase gas beyond the virial radius of a* $\log M_\star/M_\odot \approx 8.4$ *dwarf galaxy at* $z = 0.57$, ApJ, submitted

Johnson, S. D., **Mishra, N.**, Muzahid, S., et al. 2026, *MUSEQuBES: Physical Conditions, Origins, and Multielement Abundances of the Circumgalactic Medium of an Isolated, Star-forming Dwarf Galaxy at* $z = 0.57$, ApJL, 996, L30, arXiv:2510.06310

Mishra, N., Johnson, S. D., Rudie, G. C., et al. 2024, *The Cosmic Ultraviolet Baryon Survey (CUBS). IX. The Enriched Circumgalactic and Intergalactic Medium Around Star-forming Field Dwarf Galaxies Traced by O* VI *Absorption*, ApJ, 976, 149, arXiv:2408.11151

Mishra, N., & Gnedin, N. Y. 2022, *Cosmic Reionization on Computers: Evolution of the Flux Power Spectrum*, ApJ, 928, 174, arXiv:2109.13252

Mishra, N., & Schaan, E. 2019, *Bias to CMB lensing from lensed foregrounds*, PhRvD, 100, 123504, arXiv:1908.08057

OTHER PUBLICATIONS

Kakoly, A., et al. (incl. **Mishra, N.**), *The circumgalactic medium of* $L_\star$ *galaxies at* $z \approx 1.5$ *traced by DESI: evidence that a quasi-static hot phase has not yet formed*, MNRAS, in prep.

Kumar, S., Chen, H.-W., Rudie, G. C., et al. (incl. **Mishra, N.**) 2026, *The Cosmic Ultraviolet Baryon Survey X: Density and Pressure Profiles of Clumpy Circumgalactic Gas at* $z = 0.4 - 0.7$, ApJ, accepted, arXiv:2610.36088

Piacitelli, D. R., Brooks, A. M., Sanchez, N. N., et al. (incl. **Mishra, N.**) 2026, *The Simulated Oxygen Shortage (SOS): Mapping the Missing* O VI *in Simulated Dwarf Galaxies to Subgrid Physics*, ApJ, submitted, arXiv:2605.15275

Liu, Z., Johnson, S. D., Bell, E. F., et al. (incl. **Mishra, N.**) 2026, *A Comprehensive Study of Morphology and Kinematics in Extended Nebulae Around UV-luminous Quasars at* $z \approx 1$, ApJ, 1008, 247, arXiv:2605.01981

Fuller, E., Johnson, S. D., Stern, J., et al. (incl. **Mishra, N.**) 2026, *Under Pressure: Ultraviolet Emission-line Ratios as Barometers of Active Galactic Nuclei Feedback Mechanisms*, ApJ, 1000, 229, arXiv:2602.17039

Liu, Z., Johnson, S. D., Li, J. I.-H., et al. (incl. **Mishra, N.**) 2025, *The Morphology and Kinematics of a Giant, Symmetric Nebula around a Radio-loud Quasar 3C 57: Extended Rotating Gas or Biconical Outflows?*, ApJ, 984, 140, arXiv:2503.12597

Li, J. I.-H., Johnson, S. D., Avestruz, C., et al. (incl. **Mishra, N.**) 2024, *Fast and Flexible Inference Framework for Continuum Reverberation Mapping Using Simulation-based Inference with Deep Learning*, ApJ, 977, 223, arXiv:2407.14621

Johnson, S. D., Liu, Z., Li, J. I.-H., et al. (incl. **Mishra, N.**) 2024, *Discovery of Optically Emitting Circumgalactic Nebulae around the Majority of UV-luminous Quasars at Intermediate Redshift*, ApJ, 966, 218, arXiv:2404.00088

Li, J. I.-H., Johnson, S. D., Boettcher, E., et al. (incl. **Mishra, N.**) 2024, *The Cosmic Ultraviolet Baryon Survey (CUBS). VIII. Group Environment of the Most Luminous Quasars at* $z \approx 1$, ApJ, 965, 143, arXiv:2403.03983

Schutt, T., Maniyar, A. S., Schaan, E., Coulton, W. R., & **Mishra, N.** 2024, *New temperature inversion estimator to detect CMB patchy screening by large-scale structure*, PhRvD, 109, 103539, arXiv:2401.13040

Liu, Z., Johnson, S. D., Li, J. I.-H., et al. (incl. **Mishra, N.**) 2024, *The first comprehensive study of a giant nebula around a radio-quiet quasar in the* $z < 1$ *Universe*, MNRAS, 527, 5429, arXiv:2309.00053

Ren, R., Bathurst, C., Chang, Y. Y., et al. (incl. **Mishra, N.**) 2021, *Design and characterization of a phonon-mediated cryogenic particle detector with an eV-scale threshold and 100 keV-scale dynamic range*, PhRvD, 104, 032010, arXiv:2012.12430

Palliyaguru, N. T., Corsi, A., Kasliwal, M. M., et al. (incl. **Mishra, N.**) 2016, *Radio Follow-up of Gravitational-wave Triggers during Advanced LIGO O1*, ApJL, 829, L28, arXiv:1608.06518

OBSERVING

Observing Time Awarded as PI

- Magellan/Baade IMACS: 7.5 nights (2025B, 2026A, 2026B)
- Magellan/Clay MIKE: 2 nights (2026A, 2026B)

Co-Investigator on Awarded Programs

- Fuller, E., et al. (incl. **Mishra, N.**) 2026, *HST Snapshot Survey for a Three-Fold Increase in UV Obscured Quasar Spectra to Constrain Drivers of AGN Feedback*, HST Proposal. Cycle 34, ID. #18372, SNAP, 100 orbits, STScI
- Johnson, S., Chen, H.-W., Qu, Z., et al. (incl. **Mishra, N.**) 2025, *Baryonic Escape, Abundances, and Thermodynamics in Cosmic Ecosystems (BEATriCE)*, HST Proposal. Cycle 33, ID. #18107, GO, 70 orbits, ADS
- Liu, W., Johnson, S., Boettcher, E., et al. (incl. **Mishra, N.**) 2025, *Confirming and Characterizing a Fast, Cool Inflow Toward a Luminous Quasar at* $z = 0.78$, HST Proposal. Cycle 33, ID. #18039, GO, 9 orbits, ADS

- Johnson, S., Boettcher, E., Chen, H.-W., et al. (incl. **Mishra, N.**) 2024, *The first multi-phase survey of the circumgalactic medium of quasar hosts at $z < 1$*, HST Proposal. Cycle 32, ID. #17803, GO, 51 orbits, ADS
- Johnson, S., Gaspari, M., Greene, J. E., et al. (incl. **Mishra, N.**) 2024, *Diagnostics of AGN Feedback with the first UV atlas of obscured quasars*, HST Proposal. Cycle 32, ID. #17800, SNAP, 147 orbits, ADS

Total Observing Experience

- Magellan/Baade IMACS: 18.5 nights (incl. 11 on programs led by S. Johnson)
- Magellan/Clay MIKE: 4 nights (incl. 2 on programs led by S. Johnson)

PRESENTATIONS

Invited Talks

- *Oh Group Meeting*. University of California-Santa Barbara. Santa Barbara, CA. March 2026.
- *Borthakur Group Meeting*. Arizona State University. Tempe, AZ. June 2026.
- *Riverside Astrophysics Seminar*. University of California-Riverside. Riverside, CA. May 2026.
- *Yale Galaxy Lunch*. Yale University. New Haven, CN. December 2025.

Contributed Talks

- *GalScale: The many scales of galaxy environments*. Ascona, Switzerland. July 2026.
- *MMC2025: Multi-phase, Multi-temperature, and Complex*. Olbia, Sardinia, Italy. October 2025.
- *Cosmic Ecosystems*. Perimeter Institute for Theoretical Physics. Waterloo, ON, Canada. August 2025. Slides
- *Galactic Frontiers II*. Dartmouth College, Hanover, NH. June 2025. Slides
- *5th Magellan Science Meeting*. Carnegie Science's Earth and Planets Laboratory, Washington, DC. May 2025
- *Baryons Beyond Galactic Boundaries*. IUCAA, Pune, India. December 2024.
- *CGM-Chile 2024: Resolving the Circumgalactic Medium and its Impact on Galaxy Evolution*. ESO, Santa Cruz, Colchagua, Chile. November 2024. Slides.
- *Multiphase Madness*. Center for Astrophysics, Harvard University, Cambridge, MA. August 2024. Video.

Flash Talks/Posters

- *The Metal-Poor Frontier: Understanding Low-Metallicity Stars and Galaxies Across Cosmic Time*. Space Telescope Science Institute. Baltimore, MD. May 2026.
- *BerkeleyLab Undergraduate Researchers (BLUR) Poster Session*. Lawrence Berkeley National Laboratory. Berkeley, CA. May 2022. Link.
- *Science Undergraduate Laboratory Internship (SULI) Poster Session*. Fermi National Accelerator Laboratory. Batavia, IL. December 2021. Link.
- *Berkeley Physics Research Scholars (BPURS) Symposium*. UC Berkeley. Berkeley, CA. May 2021. Link.
- *Science Undergraduate Laboratory Internship (SULI) Poster Session Poster Session*. Fermi National Accelerator Laboratory. Batavia, IL. August 2020. Link.
- *Undergraduate Physics Symposium*. (2018) UC Berkeley. Berkeley, CA. Link.

AWARDS & SCHOLARSHIPS

- Rackham Graduate School Research Grant (2024, 2026)
- Rackham Graduate School Travel Grant (2024, 2025, 2026)
- NSF Graduate Research Fellowship: Honorable Mention (2022, 2024)

· Berkeley Lab Undergraduate Research (BLUR) Grant (2022): Places undergraduates, post baccalaureates, and graduate students who have established collaborations with LBNL scientists.
· Science Undergraduate Laboratory Internship (SULI) @ Fermilab (2020, 2021): Among 20 selected via nationwide application process, with Fermilab acceptance rate of $\sim 10\%$ (2x)
· Berkeley Physics Research Scholar (2019, 2020, 2021): Stipend provided to students who demonstrate the ability and motivation to execute a research project under faculty advisor at UC Berkeley. (3x)
· Clark Scholar (2016): Among 12 high school students selected via a nationalwide application process. Acceptance rate of $\sim 10\%$.

TEACHING

University of Michigan
Reference(s): Mateusz Ruszkowski, Joel Bregman, Sean Johnson, Michael Lopresto

· Astronomy 102: Introductory Astronomy - Stars, Galaxies, and the Universe

UC Berkeley
Reference(s): Alex Filippenko, Holger Muller

· Astronomy C10: Introduction to General Astronomy
· Physics 98 Seminar: Lasers for Everyone (as part of the Democratic Education at Cal program)

SERVICE

University of Michigan Magellan/MDM Time Allocation Committee
Graduate Student Member; Reference(s): Mario Mateo *2026A, 2027A*

· Review, grade, and write comments on proposals for University of Michigan time on the Magellan and MDM telescopes.
· Discuss proposals and set final rankings at the committee meeting.

Graduate Admissions Committee, Department of Astronomy
Graduate Student Member, Core Committee; Reference(s): Elena Gallo, Emily Rauscher *2026–2027*

· Evaluate PhD applications in both the initial and final review rounds.
· Take part in setting the review timeline and evaluation rubric.

Galaxies Group, Department of Astronomy
Organizer; Reference(s): Joel Bregman, Eric Bell, Sean Johnson *2023–2026*

· Organized the weekly seminar and journal club for faculty, postdocs, and students working on galactic astrophysics.
· Invited and hosted external speakers, both in person and virtual, and arranged their meetings with group members.

OUTREACH

Rackam Student Government Representative
Reference: Angelica Previero, Curtiss Engstrom *Jan 2025 - Feb 2026*

· Established in 1954, Rackham Student Government is the elected body representing the needs and concerns of the 8,300+ graduate students enrolled in Rackham Graduate School.
· As a representative for the Physical Sciences Division, I advocate for and improve the graduate student experience through service, programs, and community engagement

Berkeley Undergraduate Research Fair Coordinator
Reference: Roia Ferrazares, Austin Hedeman *May 2020 - May 2021*

- Conceptualized and organized an event to connect UC Berkeley professors with undergraduates looking to do research in their labs.
- Fall 2020 and Spring 2021 editions of the event had 12+ faculty members offering 20+ research positions. 80+ students attending the virtual event. The department now includes the fair as a regular bi-anual event.
- Assisted administration in setting up additional funding channels for undergraduate researchers including scholarships and work-study programs, the latter intending on opening up opportunity for middle and low income students. $\sim 65\%$ of positions offered were funded (compared to $\sim 25\%$ in 2019)

Splash Class Instructor
Reference: Splash at Berkeley *Mar 2020 - Oct 2020*

- Splash at Berkeley brings local high school students to UC Berkeley for a day of student-led learning. Participating students take courses in both conventional and unconventional subjects taught by Berkeley students.
- Taught a 1 hour course (An Introduction to Dark Matter Physics) to 70+ high school students (grades 9-12), over 2 semesters.