NISHANT MISHRA

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Website ◇ GitHub ◇ ADS ◇ ORCID ◇ Email

503-332-0521 ◇ 1085 S. University, Ann Arbor, MI 48109

EDUCATION

University of Michigan, Ann Arbor
Ph.D. in Astronomy & Astrophysics — May 2024 - May 2027 (expected)
M.S. in Astronomy & Astrophysics — Aug 2022 - May 2024
Advisor(s): Sean Johnson (primary), Camille Avestruz (physics)
Thesis committee: Eric Bell, Jinyi Yang, Gwen Rudie (Carnegie Observatories)

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

S.D. Johnson, **N. Mishra** et al. (2025, in prep). *MUSEQuBES: The physical state and heavy element abundances in the circumgalactic medium of a dwarf galaxy at z = 0.57.* The Astrophysical Journal.

N. Mishra, C. Avestruz, S.D. Johnson. (2025, in prep), *Quenching mechanisms of SMC mass galaxies in TNG-50.* The Astrophysical Journal.

N. Mishra 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*, The Astrophysical Journal. vol 976. no. 1. arXiv:2408.11151

N. Mishra, N. Gnedin (2022) *Cosmic Reionization on Computers: Evolution of the Flux Power Spectrum.* The Astrophysical Journal. vol 928. no. 2. arXiv:2109.13252

N. Mishra, E. Schaan (2019), *Bias to CMB lensing from lensed foregrounds*, Physical Review D, vol. 100, no. 12. arXiv:1908.08057

OTHER PUBLICATIONS

E. Fuller et al. [including **N. Mishra**] (2025,submitted) *Under Pressure: UV Emission Line Ratios as Barometers of AGN Feedback Mechanisms.* The Astrophysical Journal.

Z. Liu et al. [including **N. Mishra**] (2025) *The Morphology and Kinematics of a Giant, Symmetric Nebula Around a Radio-Loud Quasar 3C 57: Extended Rotating Gas or Biconical Outflows?.* The Astrophysical Journal. vol 984, no. 2. arXiv:2503.12597

J. Li et al. [including **N. Mishra**] (2024) *Fast and Flexible Inference Framework for Continuum Reverberation Mapping using Simulation-based Inference with Deep Learning.* The Astrophysical Journal. vol. 977, no. 2. arXiv:2407.14621

S.D. Johnson et al. [including **N. Mishra**] (2024) *Discovery of optically emitting circumgalactic nebulae around the majority of UV-luminous quasars at intermediate redshift.* The Astrophysical Journal, vol. 966, no. 2. arXiv:2404.00088

J. Li et al. [including **N. Mishra**] (2024) *The Cosmic Ultraviolet Baryon Survey (CUBS) VIII: Group Environment of the Most Luminous Quasars at $z \approx 1$.* The Astrophysical Journal, vol. 965, no. 2. arXiv:2403.03983

T. Schutt et al. [including **N. Mishra**] (2024) *A new "temperature inversion" estimator to detect CMB patchy screening by large-scale structure.* Physical Review D, vo. 109, no. 10. arXiv:2401.13040

Z. Liu et al. [including **N. Mishra**] (2023) *The first comprehensive study of a giant nebula around a radio-quiet quasar in the $z < 1$ Universe.* Monthly Notices of the Royal Astronomical Society, vol. 527, no. 3. arXiv:2309.00053

R. Ren et al. [including **N. Mishra**] (2021) *Design and characterization of a phonon-mediated cryogenic particle detector with an eV-scale threshold and 100 keV-scale dynamic range.* Physical Review D. vol 104. no. 3. arXiv:2012.12430

N. T. Palliyaguru et al. [including **N. Mishra**] (2016), *Radio follow-up of gravitational-wave triggers during Advanced LIGO O1.* The Astrophysical Journal Letters, vol. 829, no. 2. arXiv:1608.06518

CONTRIBUTED TALKS

- *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.

POSTERS

- *MMC2025: Multi-phase, Multi-temperature, and Complex. How Feedback Shapes the Nature of the CGM, Halo Gas, and Galaxies from Galaxy Groups to Clusters.* Olbia, Sardinia, Italy. October 2025.
- *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.

SELECTED AWARDS & SCHOLARSHIPS

- Rackham Graduate School Precandidate Graduate Student Research Grant (2024)
- Rackham Graduate School Travel Grant (2024, 2025)
- NSF Graduate Research Fellowship (2022, 2024): Honorable Mention (2x)
- 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)

OUTREACH

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

· 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.