

Aadya Agrawal

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Education

University of Illinois at Urbana-Champaign

Urbana-Champaign, IL

DOCTOR OF PHILOSOPHY IN ASTRONOMY

Aug. 2023 - Present

- Research Advisor: Gautham Narayan
- GPA: 3.8/4.0
- Ph.D. Candidate (as of Sep 29, 2025)

University of Michigan

Ann Arbor, MI

BACHELOR IN SCIENCE

Sep. 2019 - May 2023

- High Honors in Physics and Astronomy
- Physics Honors Thesis Advisor: Dr. Hui Deng
- Cumulative GPA: 3.64/4.00

Research Experience

University of Illinois at Urbana-Champaign

Urbana-Champaign, IL

ADVISOR: DR. GAUTHAM NARAYAN

Aug. 2023 - Present

- Conducting difference imaging and measuring updated time-delay measurements for SN H0pe.
- Testing the lens models of strongly lensed SN H0pe using JWST NIRCcam data. Submitted to ApJ.
- Modelled strongly-lensed Type Ia supernovae using **BAYESN** and **SALT3**.
- Conducting cosmological analysis combining ground-based data with HST for Supernovae in the InfRAred Avec Hubble project
- Mentoring 2 undergraduate students.

University of Michigan - Dept of Astronomy

Ann Arbor, MI

ADVISOR: DR. JOEL BREGMAN

May 2022 - May 2023

- Matched sources from the eRosita Final Equatorial Depth survey (eFEDS) to the MCXC and Planck catalogs to determine which sources are new.
- Created master catalog combining data from eFEDS, Planck and MCXC catalogs.
- Creating a source detection algorithm to find strong SZ peaks in the publicly available Planck maps and match them to sources in the master catalog. This algorithm will be run over the whole sky to help with the detection of new low mass galaxy groups and clusters.
- Calibrating the algorithm using the eFEDS field to ensure accuracy and completeness.

University of Michigan - Undergraduate Research Opportunities Program (UROP)

Ann Arbor, MI

ADVISOR: DR. HUI DENG

Sept. 2019 - May. 2023

- Designed and developed a new microscope transfer stage with two XYZ stages, a rotating stage, a heating element and a microscope with camera to facilitate the fabrication of 2D heterostructures using the PC film mechanical transfer method.
- Prepared 2D heterostructures and transferred them onto a 1D photonic nanocavity using the mechanical transfer method.
- Analyzed the integrated structure using an laser and spectrometer to investigate the properties of the exciton
- Honor's Thesis: "Integration of Van der Waals heterostructures of Transition Metal Dichalcogenides with 1D photonic crystal nanobeams."

Awards

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| 2023 | Chambliss Astronomy Award , American Astronomical Society |
| 2025-26 | Graduate Student Fellowship , Center for Astrophysical Surveys & The NFS-Simons Intitute for the Sky (SkAI) |
| 2027 | IPAC Visiting Graduate Student Fellowship , Caltech |

Telescope Time

Que SIRAH SIRAH: Completing the Low-Redshift NIR Supernova Anchor for Roman

HST Cycle 34 • PID: 18377

PRINCIPAL INVESTIGATOR

- **14 primary HST orbits.** Templates to reduce host contamination in SIRAH SN photometry, completing the NIR anchor for Roman.

Taking Aim at Precision Cosmology with SN Atalanta

JWST Cycle 4 DDT • PID: 12774

PRINCIPAL INVESTIGATOR - \$35K

- **3.4 hrs JWST NIRCcam + 4 HST orbits.** DDT follow-up of a VENUS-discovered lensed SN IIP to measure time delays and H_0 .

Setting the Clock for the First Future Lensed Supernova Reappearance Beyond $z=2$

JWST Cycle 5 DDT • PID: 12782

CO-INVESTIGATOR (PI: FUJIMOTO)

- **9.3 hrs JWST NIRCам + NIRSpec.** Follow-up of a $z \sim 3$ –4 cluster-lensed SN with a predicted future reappearance, opening time-delay H_0 cosmography beyond $z = 2$ for the first time.

LensTrove: Unlocking the Cosmological Power of Cluster-lensed Supernovae

HST Cycle 34 • PID: 18395

CO-INVESTIGATOR (PI: LARISON)

- **27 primary HST orbits + 21.90 hrs JWST.** ToO observations of 3 glSNe for a $< 2.5\%$ H_0 measurement, enabling a $> 3\sigma$ statement on the Hubble Tension.

Completing a Legacy Dataset with Deep HST Imaging of 121 Nearby Star-Forming Galaxies

HST Cycle 34 • PID: 18338

CO-INVESTIGATOR (PI: KILPATRICK)

- **193 primary + 138 parallel spacecraft orbits.**

Catching Eos by the Tail

JWST Cycle 5 • PID: 12299

CO-INVESTIGATOR (PI: LARISON)

- **29.2 hrs JWST NIRSpec** Spectroscopic follow-up of lensed SN Eos during radioactive decline to measure ejecta velocity and metallicity.

Requiem's Return: Precision Cosmology from a Decade-Delayed, Strongly-Lensed Supernova and Its New Sibling

HST Cycles 33 & 34 • PID: 18069

CO-INVESTIGATOR (PI: PIEREL)

- **14 (C33) + 12 (C34) HST orbits + 25.80 hrs JWST.** Monitoring for Requiem's return and obtaining follow-up observations.

Standard-ish Candles: Measuring SN Ia Luminosity Drift at $z > 3$

JWST Cycle 5 • PID: 12146

CO-INVESTIGATOR (PI: PIEREL)

- **120.9 primary spacecraft hours.** Building a $z \gtrsim 3$ SN Ia sample via 5 ToOs to test luminosity drift and constrain bias below Roman precision.

Publications

Agrawal, Aadya et. al, May 2026. *Testing Lens Models of PLCK G165.7+67.0 Using Lensed SN H0pe*. The Astrophysical Journal, Volume 1002, Issue 2, id.187, 16 pp.

Grayling, M et. al (incl. Agrawal, Aadya) , May 2026. *BayeSN-TD: Time Delay and H_0 Estimation for Lensed SN H0pe*. Monthly Notices of the Royal Astronomical Society, Volume 548, Issue 2, id.stag340, 21 pp.

Coulter, David et. al (incl. Agrawal, Aadya), Jan 2026. *A spectroscopically confirmed, strongly lensed, metal-poor Type II supernova at $z = 5.13$* . eprint arXiv:2601.04156. Submitted to Science.

Pierel, Justin et. al (incl. Agrawal, Aadya) , Sept 2025. *Cosmology with supernova Encore in the strong lensing cluster MACS J0138–2155: Time delays & Hubble constant measurement*. The Astrophysical Journal, Volume 998, Issue 2, id.219, 17 pp.

Pierel, Justin et. al (incl. Agrawal, Aadya) , March 2025. *Testing for Intrinsic Type Ia Supernova Luminosity Evolution at $z > 2$ with JWST* The Astrophysical Journal Letters, Volume 981, Issue 1, id.L9, 10 pp.

Larison, Conor et. al (incl. Agrawal, Aadya) , February 2025. *LensWatch. II. Improved Photometry and Time-delay Constraints on the Strongly Lensed Type Ia Supernova 2022qmx ("SN Zwicky") with Hubble Space Telescope Template Observations* The Astrophysical Journal, Volume 980, Issue 2, id.172, 13 pp.

Pierel, Justin (incl. Agrawal, Aadya) , June 2024. *Lensed Type Ia Supernova "Encore" at $z=2$: The First Instance of Two Multiply-Imaged Supernovae in the Same Host Galaxy* The Astrophysical Journal Letters, Volume 967, Issue 2, id.L37, 9 pp.

Agrawal, Aadya , 2024. *Integration of Van der Waals heterostructures of Transition Metal Dichalcogenides with 1D photonic crystal nanobeams*. Physics Honors Thesis

Presentations and Posters

August 2026. *Probing the Hubble Constant with JWST: Updated Time-Delay Measurements from the Triply-Imaged Type Ia SN H0pe*. Poster: JWST through Cluster Lenses, Santander, Spain

May 2026. *Probing the Hubble Constant with JWST: Updated Time-Delay Measurements from the Triply-Imaged Type Ia SN H0pe*. Poster: IAU 406: Future Landscape of Astrophysical Transients, Turku, Finland

January 2026. *Probing the Hubble Constant with JWST: Updated Time-Delay Measurements from the Triply-Imaged Type Ia Supernova SN H0pe*. Presentation: Extragalactic Time Domain Science with JWST Special Session, 247th Meeting of the American Astronomical Society, Phoenix, AZ.

January 2026. *Testing Lens Models of PLCK G165.7+67.0 Using Lensed SN H0pe*. Presentation: 247th Meeting of the American Astronomical Society, Phoenix, AZ.

June 2025. *Testing Lens Models using SN H0pe*. Poster: Cosmic Lighthouses: Astrophysical and Cosmological Challenges with Type Ia Supernovae Meeting, KICC, Cambridge, UK.

April 2025. *Testing Lens Models using SN H0pe*. Poster: Astrofest 2025, Urbana-Champaign, IL.

March 2025 *Testing Lens Models with Triply-Lensed SN H0pe*. Presentation: Transients from Space Workshop 2025, STSci, Baltimore, MD.

July 2024 *Testing Lens Models using SN H0pe*. Poster: Dark Energy Science Collaboration Meeting, Zurich, Switzerland.

January 2023. *Improving the Detection of Low-Mass Galaxy Clusters and Groups using the Sunyaev-Zeldovich Effect*. Poster: 241st Meeting of the American Astronomical Society, Seattle, WA. Awarded the **CHAMBLISS ASTRONOMY AWARD IN THE UNDERGRADUATE CATEGORY**.

April 2019. *Developing new equipment and method to create 2D heterostructures using the mechanical transfer process*. Presentation: Undergraduate Research Opportunities Program Symposium, Ann Arbor, MI.

Teaching Experience

Spring 2023	Astronomy 405 - Planetary Science , Teaching Assistant	UIUC, IL
Fall 2023	Astronomy 406 - Galaxies and the Universe , Teaching Assistant	UIUC, IL

Mentoring

Jan 2025-Present	Ruixing (Ray) Liang , Undergraduate, <i>Testing and validation of Photo-z methods for LSST</i>	UIUC
Jan 2025-Present	Tanmay Raswant , Undergraduate, <i>Cosmological analysis of ground-based data for SIRA</i>	UIUC

Professional Experience

Aug 2025	JWST Summer School: High Redshift Transients , Space Telescope Science Institute	Baltimore, MD
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Outreach Activities

Astronomy on Tap, Urbana-Champaign Urbana, IL
ORGANIZER Jan. 2025 - Present

- Organized monthly public talks at a local bar coordinating with local and visiting speakers.
- Create social media posts and manage profile to build engagement.

Astronomy Summer Camp Urbana, IL
COUNSELOR 2024 - 2026

- Created Jupyter notebooks to teach students the basics of coding with Python, placing emphasis on packages commonly used in astronomy.
- Led activities and coding sessions using the CAPS Jupyter Hub with other counselors to build astronomy knowledge, scientific analysis and coding skills to provide high school students with early experience in the field.

Eclipse at the Park Marion, IL
VOLUNTEER Apr. 2024

- Conducted solar observing for 6 hours on the day of the total solar eclipse at the Marion Baseball Stadium for around 1500 people of all ages with a team of 13 volunteers, while answering questions about stellar astrophysics and solar physics.

International Visual Literacy Association conference Champaign, IL
PECHAKUCHA SPEAKER Oct. 2023

- Gave a short PechaKucha talk (20 slides, 20 seconds per slide) titled "*Cosmic Perspectives: How Astronomy Shapes Our View*" to an audience of 50 people at the closing reception of the conference

Stars & Smores Night at Allerton Park & Retreat Center Monticello, IL
VOLUNTEER Sep. 2023

- Conducted a 3 hour stargazing session + Q & A for 30 people of all ages at Allerton park using 2 dobsonian telescopes along with 3 other volunteers

Memberships

Dark Energy Science Collaboration

Lenswatch Collaboration

Strong Lensing Science Collaboration

VENUS Collaboration