

Yuanze Luo

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ABOUT ME

I'm a postdoctoral researcher in the Department of Physics and Astronomy at Texas A&M University with research interests covering a wide range of topics related to galaxy evolution and active galactic nuclei (AGN). I've been investigating the effects of AGN on the star formation of their host galaxies and the differences in the multiphase interstellar medium of various types of AGN-host galaxies. My studies take advantage of multi-wavelength data from X-ray to radio and my expertise includes analyzing interferometry, imaging, space- and ground-based spectroscopy data as well as statistical techniques.

EDUCATION

Texas A&M University

Postdoctoral Research Associate

Sep 2024 - present

Johns Hopkins University

Ph.D. in Astronomy and Astrophysics

Aug 2019 - Aug 2024

Thesis: The Connection between Active Galactic Nuclei,
Interstellar Medium, and Evolution of Nearby Galaxies

Advisors: Kate Rowlands, Tim Heckman

Master of Arts in Physics

University of Illinois at Urbana-Champaign

Bachelor of Science in Physics

Bachelor of Science in Astronomy

Minor in Computer Science

Aug 2015 - May 2019

SKILLS

Technical	Python, Java, C++, R, \LaTeX
Languages	English, Mandarin, Japanese (JLPT N2)
Hobbies	Piano, Violin

EXPERIENCE

Department of Physics and Astronomy at TAMU

Postdoctoral Research

Sep 2024 - present

- Investigate the properties of AGN and outflows in intermediate-redshift post-starburst galaxies using spectroscopic surveys such as SDSS (the SQuIGGLE survey) and DESI.
Supervisor(s): Prof. Justin Spilker
- Science preparation for MOONS on VLT. Test sample selections, observation simulations, and data reduction pipelines.
Supervisor(s): Prof. Justin Spilker, Prof. Robert Kennicutt, Prof. Casey Papovich

Department of Physics and Astronomy at JHU

Graduate Research

Aug 2019 - Aug 2024

- Look for evidence of gas accretion to sustain star formation in galaxies by measuring and analyzing the anomaly of gas-phase metallicity in spatially resolved observations of nearby galaxies (SDSS IV - MaNGA survey).
Supervisor(s): Prof. Tim Heckman

- Study behaviors of post-starburst galaxies ($z < 0.2$) focusing on the effects of AGN and outflows on star formation quenching, utilizing multiwavelength observations from X-ray to radio.
Supervisor(s): Dr. Kate Rowlands, Dr. Katherine Alatalo, Prof. Tim Heckman
- Investigate the ISM properties of type 1 and type 2 quasar host galaxies, testing the evolutionary link between different kinds of galaxies.
Supervisor(s): Dr. Andreea O. Petric

Graduate Teaching Assistant

Aug 2019 - May 2020

- Lead problem-solving sections and office hours for students taking undergraduate general physics courses. Additional duties include proctoring exams, grading homework, writing homework solution manuals, and reviewing exam problems.
- Lead mechanics lab sections for students taking undergraduate general physics courses. Additional duties include grading lab reports, preparing presentation slides, and holding additional office hours.

Astronomy Department at UIUC

Undergraduate Research

Jun 2017 - Jun 2019

- Create visualizations for 126 galaxies in Extragalactic Database for Galaxy Evolution survey (EDGE) using Python packages yt and Plotly. <http://mmwave.astro.illinois.edu/edgedata/>
Supervisors: Prof. Tony Wong, Dr. Matthew Turk
NSF Award number: 1616199
- Improve the signal-to-noise ratio of CO observations using H α velocity information, and generating radial profiles using the improved CO data for the 126 EDGE galaxies. Organize results in a series of Python notebooks.
Supervisor: Prof. Tony Wong
NSF Award number: 1616199
- Analyze differences in aspects such as light curve shapes and emission line properties for 977 extreme variability quasars selected from SDSS and DES. Fit point-source-point-lens microlensing model to selected quasar light curves using the Markov chain Monte Carlo method.
Supervisor: Prof. Yue Shen

Department Grader

Aug 2016 - May 2019

- Grade assignments for undergraduate astronomy courses. Answer questions during office hours.
- Hold night and solar observing sections at the university observatory for students taking astronomy courses.
- Proctor exams for astronomy and physics courses.

NetMath at UIUC

Grader

Jun 2016 - Aug 2016

- Grade online Mathematica-based assignments for students taking Calculus online courses.
- Cooperate with course teaching assistants to customize materials for students.

PUBLICATIONS

Refereed Journal Articles

- **Luo, Y.**, Shen, Y, Yang, Q, *Characterization of optical light curves of extreme variability quasars over a ~ 16 -yr baseline*, 2020, MNRAS, 494, 3686
- **Luo, Y.**, Heckman, T; Hwang, H et al., *Evidence for the Accretion of Gas in Star-forming Galaxies: High N/O Abundances in Regions of Anomalously Low Metallicity*, 2021, ApJ, 908, 183

- Sazonova, E., ... **Luo, Y** et al., *Are all post-starbursts mergers? HST reveals hidden disturbances in the majority of PSBs*, 2021, ApJ, 919, 134
- Abdurro'uf, ... **Luo, Y** et al., *The Seventeenth Data Release of the Sloan Digital Sky Surveys: Complete Release of MaNGA, MaStar, and APOGEE-2 Data*, 2022, ApJS, 259, 35
- **Luo, Y.**, Rowlands, K; Alatalo, K et al., *A Multiwavelength view of IC 860: What Is in Action inside Quenching Galaxies*, 2022, ApJ, 938, 63
- Otter, J., ... **Luo, Y** et al., *Resolved Molecular Gas Observations of MaNGA Post-starbursts Reveal a Tumultuous Past*, 2022, ApJ, 941, 93
- Wong, T., ... **Luo, Y** et al., *The EDGE-CALIFA Survey: An Extragalactic Database for Galaxy Evolution Studies*, 2023, ApJS, 271, 35
- Boardman, N., ... **Luo, Y** et al., *SDSS-IV MaNGA: how do star-formation histories affect gas-phase abundances?*, 2024, MNRAS, 527, 10788
- Alatalo, A., ... **Luo, Y** et al., *Characterizing the Molecular Gas in Infrared Bright Galaxies with CARMA*, 2024, ApJ, 975, 241
- Otter, J., ... **Luo, Y** et al., *Pulling back the curtain on shocks and star-formation in NGC 1266 with Gemini-NIFS*, 2024, ApJ, 975, 142
- **Luo, Y.**, Petric, A.O. et al., *Measuring the ISM content of nearby, luminous, Type 2 QSOs through CO and [C II]*, 2025, ApJ, 981, 194
- Fodor, A., ... **Luo, Y** et al., *Shocked P0ststarburst Galaxy Survey. IV. Outflows in Shocked Post-Starburst Galaxies Are Not Responsible For Quenching*, 2025, ApJ, 979, 94
- Verrico, M., ... **Luo, Y** et al., *Modeling Star Formation Histories of Changing-look AGN Host Galaxies with Prospector*, 2025, ApJ, 989, 101
- D'Onofrio, V., ... **Luo, Y** et al., *Quenching Through Tidal Gas Removal: Molecular Gas and Star Formation in Tidal Tails of $z \sim 0.7$ Post-Starburst Galaxies*, 2025, ApJ, 990, 166
- Suess, K., ... **Luo, Y** et al., *Cold gas in a post-starburst pair at $z \sim 1.4$: major mergers as a pathway to quenching in the HeavyMetal survey*, 2025, ApJL, accepted, arXiv:2506.14361
- Spilker, J., ... **Luo, Y** et al., *Unusually High Gas-to-Dust Ratios Observed in High-Redshift Quiescent Galaxies*, 2025, ApJL, accepted, arXiv:2507.16914
- Setton, D., ... **Luo, Y** et al., *SQuIGGLE: Buried star formation cannot explain the rapidly fading CO(2-1) luminosity in massive, $z \sim 0.7$ post-starburst galaxies*, 2025, ApJ, accepted, arXiv:2509.00148
- **Luo, Y.**, Rowlands, K; Alatalo, K et al., *A Multiwavelength Evaluation of AGN in the Post-Starburst Phase*, 2025, ApJ, submitted

Conference Proceedings

- **Luo, Y.**, *A Multiwavelength View of Black Holes and Outflows in Post-starburst Galaxies*, 2023, Proceedings IAU Symposium No.378 Black hole winds at all scales, <https://doi.org/10.1017/S1743921323002818>

AWARDED TELESCOPE PROPOSALS

Co-Investigator

- VLA - 4.05 hours (semester 2024B; PI: Justin Otter): *A multi-wavelength analysis of radio jets driving shocks in NGC 1266*
- JWST - 25.0 primary spacecraft hours (Cycle 4; PI: Adam Smercina): *A Resolved Infrared Census of Star Formation and AGN Activity in Rapidly Quenched Galaxies*
- ALMA - 34.7 hours (Cycle 12; PI: Margaret Verrico): *A Resolved Infrared Census of Star Formation and AGN Activity in Rapidly Quenched Galaxies*
- ALMA - 12.7 hours (Cycle 12; PI: Vincenzo D'Onofrio): *What's Left Behind: A Census of the Cold ISM in the First Massive Quiescent Galaxies*

SELECTED PRESENTATIONS

- Contributed talk at Workshop on Chemical Abundances in Gaseous Nebulae: From The Milky Way to the Early Universe (5/2021)
- Press conference at AAS 239th meeting (1/2022)
- iPoster at AAS 240th meeting (6/2022)
- STScI-JHU AGN journal club talk (11/2022)
- Contributed talk at IAU 378 - Black hole winds at all scales (3/2023)
- The HotSci talk series at STScI (7/2023)
- Contributed talk at AAS 243th meeting (1/2024)

SERVICE AND OUTREACH

- Weekly astro seminar organizer at TAMU.
- Mentor for astronomy graduate students at TAMU department mentorship program.
- JHU-Space Telescope Science Institute (STScI) student liaison. Help students with questions concerning working with scientists at STScI; Host weekly meetings between JHU-STScI joint colloquium speakers and JHU students.
- Student organizer for regular meetings within the JHU-STScI research group; JHU department-wide events such as new student orientation and student meetings with faculty candidates.
- Serve in the local organization committee for the 2024 Spring Symposium at STScI: *Recipes to Regulate Star Formation at All Scales: From the Nearby Universe to the First Galaxies*.
- Member of Women In Physics JHU.
- Violinist at Johns Hopkins Homewood Chamber Music Seminar and Hopkins Concert Orchestra.
- Member of University of Illinois Astronomy Society. Help organize open house events for the public (set up telescopes, guide observations, and answer questions about general astronomy). Participate in telescope maintenance work.
- Member of Krannet Center Student Association at UIUC. Volunteer at Krannert Center for the Performing Arts.
- Tutor at Urbana High School. Work with a local teacher in her homeroom and assist students with homework problems in scientific subjects

HONORS AND AWARDS

- International Astronomical Union (IAU) travel grant
- Space Telescope Science Institute Directors Research Funds (DDRF)
- Chambliss Astronomy Achievement Student Award Honorable Mention, 240th American Astronomical Society (AAS) meeting
- Summa Cum Laude and Highest Distinction in Physics Department at UIUC
- Summa Cum Laude and High Distinction in Astronomy Department at UIUC
- Bronze Tablet at UIUC upon graduation

- Member of James Scholar Honor Program at UIUC since Aug 2015
- College of Liberal Arts & Sciences Dean's List at UIUC in Fall 2015 semester, Spring 2016 semester, Fall 2016 semester, Fall 2017 semester