

# Mary Lynne Saade (Lynnie)

Science and Technology Institute  
Universities Space Research Association  
320 Sparkman Drive, Huntsville, AL 35805  
ORCID: [0000-0001-7163-7015](https://orcid.org/0000-0001-7163-7015)

Office: NSSTC 2242

Email: [mlsaade@usra.edu](mailto:mlsaade@usra.edu)

## Research Interests

black holes, active galactic nuclei, X-ray binaries, X-ray astronomy, neutron stars

## Education

- **University of California, Los Angeles** Los Angeles, CA  
*Ph.D. Astronomy and Astrophysics* 2019-2023
- **University of California, Los Angeles** Los Angeles, CA  
*M.S. Astronomy* 2015-2017
- **Rice University** Houston, TX  
*B.S. Astrophysics* 2011-2015

## Awards, Grants & Honours

UCLA Graduate Division Fellowship . . . . . 2015  
Rice Physics & Astronomy Summer Research Fellowship . . . . . 2014

## Research Experience

- **Marshall Space Flight Center** Huntsville, AL  
*Postdoctoral Position* 2023-Present
  - Advisors: P. Kaaret (MSFC), S. Ehlert (MSFC), P. Maksym (MSFC)
  - X-ray spectroscopy and polarimetry of
    - \* X-ray binaries (neutron stars and black holes)
    - \* active galactic nuclei (blazars and radio-quiet)
- **University of California, Los Angeles** Los Angeles, CA  
*Thesis Research* 2018 - 2023
  - Advisors: D. Stern (JPL), M. Brightman (Caltech), M. Malkan (UCLA)
  - X-ray observations of
    - \* candidate binary supermassive black holes with subparsec separations
    - \* candidate fading active galactic nuclei
- **University of California, Los Angeles** Los Angeles, CA  
*Second Year Project* 2016 - 2018
  - Advisor: R. Michael Rich (UCLA)

- Measured the optical stellar halos of nearby galaxies

- **Rice University**

Houston, TX

*Senior Thesis*

2014 - 2015

- Advisor: I. Smith (Rice)
- Measured radio flux of microquasar GRS 1758-258

## Publications

### First Authored

- **Saade, M.L.**, Ehlert, S., Liodakis, I., Kaaret, P., and Tavecchio, F. “No Clear Correlation between X-ray Spectral Properties and Polarization for High Synchrotron Peaked Blazars”, 2025, arXiv:2506.15826
- **Saade, M. L.**, Kaaret, P., Liodakis, I., and Ehlert, S. R. “A Comparison of the X-ray Polarimetric Properties of Stellar and Supermassive Black Holes”, 2024c, *The Astrophysical Journal*, 974, 101
- **Saade, M. L.**, Kaaret, P., Gnarini, A., et al. “X-ray Polarimetry of the Dipping Accreting Neutron Star 4U 1624-49”, 2024b, *The Astrophysical Journal*, 963, 133
- **Saade, M. L.**, Brightman, Stern, D. M., et al. “*NuSTAR* Observations of Candidate Sub-Parsec Binary Supermassive Black Holes”, 2024a, *The Astrophysical Journal*, 966, 104
- **Saade, M. L.**, Brightman, M., Stern, D., Malkan, M. A., and García, J. “*NuSTAR* Observations of AGN with Low Observed X-ray to [OIII] Luminosity Ratios: Heavily Obscured AGN or Turned-Off AGN?”, 2022, *The Astrophysical Journal*, 936, 162
- **Saade, M. L.**, Stern, D., Brightman, M. et al. “*Chandra* Observations of Candidate Sub-Parsec Binary Supermassive Black Holes”, 2020, *The Astrophysical Journal*, 900, 148

### Co-Authored

- Liodakis, I., Chakraborty, S., Marin, Frédéric, et al. (including **Saade, M. L.**). “Detection of Compton scattering in the jet of 3C 84”, 2025, *The Astrophysical Journal Letters*, 994, L9
- Capecciacci, S., Liodakis, I., Middei, R., et al. (including **Saade, M. L.**). “Unveiling Blazar Synchrotron Emission: A Multiwavelength Polarimetric Study of High-synchrotron peaked and Low-synchrotron peaked Populations”, 2025, *Astronomy & Astrophysics*, 703, A19
- Roberts, O. J., Kaaret, P., **Saade, M. L.**, et al. “*NuSTAR* Analysis of the 2024 Periastron Passage of TeV Binary PSR B1259-63”, 2025, *The Astrophysical Journal*, 988, 244
- MAGIC Collaboration, Abe, K., Abe, S., Abhir, J., et al. (including **Saade, M. L.**). “Insights from the first flaring activity of a high-synchrotron-peaked blazar with X-ray polarization and VHE gamma rays”, 2025, *Astronomy & Astrophysics*, 695, A217
- Maksym, W. P., Liodakis, I., **Saade, M. L.**, et al. “A Two Week *IXPE* Monitoring Campaign on Mrk 421”, 2025, *The Astrophysical Journal*, 986, 230
- Kaaret, P., Roberts, O.J., Swartz D. A., et al. (including **Saade, M. L.**) “Magnetic field geometry of the gamma-ray binary PSR B1259-63 revealed via X-ray polarization”, 2024, *The Astrophysical Journal*, 974, L1

- Ursini, F., Gnarini, A., Capitanio, F., et al. (including **Saade, M.L.**) “The *IXPE* View of Neutron Star Low-Mass X-ray Binaries”, 2024, *Galaxies*, 12(4), 45
- Gnarini, A., **Saade, M. L.**, Ursini, F., et al. “Constraining the geometry of the dipping atoll 4U 1624-49 with X-ray spectroscopy and polarimetry”, 2024, *Astronomy and Astrophysics*, 690, A230
- Li, G., Tsai, Chao-Wei, Stern, D., et al. (including **Saade, M. L.**). “Discovery of a Low-Redshift Hot Dust-Obscured Galaxy”, 2023, *The Astrophysical Journal*, 958, 162
- Rich, R.M., Mosenkov, A., Lee-Sauders, H. et al. (including **Saade, M.L.**). “The haloes and environments of nearby galaxies (HERON) – I. Imaging, sample characteristics, and envelope diameters”, 2019, *Monthly Notices of the Royal Astronomical Society*, 490, 1539

## Service to the Community

*NuSTAR* TAC

*IXPE* TAC

peer reviewer for *The Astrophysical Journal*

## Approved Observing Programs (P.I.)

*NuSTAR* Cycle 6 Program – *NuSTAR* Survey of Candidate Subparsec SMBH Binaries (53 ks, \$66,389)

*Swift* ToO Program – Transient activity in NGC 6890 (2 ks)

*Swift* ToO Program – GRS 1758-258 (7 observations, 500 s)

*NICER* DDT Observations of 4U 1624-49 (4 observations, 1-3 ks)

*NuSTAR* DDT Observation of 4U 1624-49 (41 ks)

## Presentations

### Invited Talks

- “Constraining Supermassive Black Hole Growth and Feeding Using X-rays”, Virtual talk, University of California, San Diego, Mar 2022

### Contributed Talks

- “No Clear Correlation between X-ray Spectral Properties and Polarization for High Synchrotron Peaked Blazars”, Oral Presentation, American Astronomical Society HEAD Meeting 22, Oct 2025
- “A Two-week *IXPE* Campaign on Mrk 421”, Oral Presentation, American Astronomical Society HEAD Meeting 22, Oct 2025 (on behalf of Peter Maksym)

- “Comparing the X-ray Polarization Properties of Stellar and Supermassive Black Holes”, Oral Presentation, International X-ray Polarization Symposium, September 2024
- “A First Look at the X-ray Polarization of 4U 1624-49 with *IXPE*”, Oral Presentation, American Astronomical Society Meeting 243, January 2024
- “Call of the Duty Cycle: Searching for Fading AGN in the 12  $\mu\text{m}$  Galaxies”, Oral Presentation, American Astronomical Society HEAD Meeting 19, Mar 2022
- “*Chandra* Observations of Candidate Binary Supermassive Black Holes”, Lightning Talk, Chandra Frontiers in Time Domain Science, Oct 2020

## Posters

- “Recent Science Results from MSFC X-ray Astronomy Missions”, Marshall Space Flight Center annual Jamboree, May 2025
- “*NuSTAR* Observations of Candidate Subparsec Binary Supermassive Black Holes”, American Astronomical Society Meeting 241, January 2023
- “Call of the Duty Cycle: Searching for Fading AGN in the 12  $\mu\text{m}$  Galaxy Sample”, Ten years of High-Energy Universe in Focus: NuSTAR 2022, June 2022
- “Surveying the X-ray Properties of Candidate SMBH Binaries”, American Astronomical Society HEAD Meeting 17, March 2019

## Outreach

- [USRA Black Hole Corona Press Release](#) Online  
*Press Release on My Research* Nov 22, 2024
- [NASA Black Hole Corona Press Release](#) Online  
*Press Release on My Research* Oct 17, 2024
- [NASA In the Park](#) In Person  
*Event Hosted by MSFC for the Public* June 22, 2024
- [Alabama STEAMfest Volunteer](#) In Person  
*Annual Science Fair Held in Huntsville* Oct 25, 2023
- [NASA’s Black Hole Week](#) Online  
*Answered Questions about Black Holes as one of NASA’s Black Hole Experts* May 3, 2023
- [JPL Explore Black Hole/NuSTAR Booth Volunteer](#) In person  
*Annual JPL Open House* April 29, 2023
- [Exploring Your Universe Ask an Astronomer Volunteer](#) In person  
*Annual UCLA K-12 Science Fair* Nov 6, 2022
- [Astrobites](#) Online  
*Writer-11 articles published* Jan 2022 - Feb 2024
- [Exploring Your Universe Ask an Astronomer Volunteer](#) Virtual  
*Annual UCLA K-12 Science Fair* 2020
- [Personal Quora Account](#) Online  
*I answer people’s astronomy questions here* 2015 - present

## Teaching Experience

- **University of California, Los Angeles**

Los Angeles, CA

*Teaching Assistant*

2015 - 2017, 2022

- PHYS 5C Physics for Life Science Majors: Electricity, Magnetism, and Modern Physics lab 2017
- ASTR 3: Nature of Universe lab 2016, 2022
- ASTR 5: Life in the Universe 2015-2016

- **University of California, Los Angeles**

Los Angeles, CA

*Grader/Reader*

2017-2020

- ASTR 5: Life in the Universe 2017, 2020
- PHYS 1A: Mechanics 2019
- PHYS 140A: Introduction to Solid State Physics 2017-2018

## IT Skills

### Programming Languages

Python, MATLAB, tcl

### Scientific Software

CIAO, HEASOFT, XMMSAS, DS9, IRAF, CASA, TOPCAT, ixpeobssim

## Professional Memberships

- American Astronomical Society (AAS)
- AAS High Energy Astrophysics Division (HEAD)