

Rachel R. Langgin

Graduate Astronomy Student at the University of Nevada-Las Vegas, Research Assistant with the LIGO Scientific Collaboration, NV NASA Graduate Research Fellow (2024-2025)

Email	langgin@unlv.nevada.edu	Address	944 E Harmon Ave,
Personal	rachellanggin@gmail.com		Las Vegas, NV 89119, USA
Voice	+1 (702) 895-3563		Office: BPB 230
ORCID ID	https://orcid.org/0000-0002-5116-6217		

EDUCATION

Expected Ph.D. in Astronomy
May 2027 University of Nevada-Las Vegas, Las Vegas, NV 89154, USA

2023 B.A. in Astrophysics, Minor in Dance
Bryn Mawr College, Bryn Mawr, PA 19010, USA

Thesis: Spectral Analysis of Red and Blue Quasars and their Effect on Galactic Evolution

Honors:

Cum Laude

Keck Northeast Astronomy Consortium Research Scholar

Marian E. Koshland Integrated Natural Science Center Research Scholar

2019 High School Diploma
Las Vegas Academy, Las Vegas, NV 89101, USA

Concentration in Voice

RESEARCH EXPERIENCE

Aug. 2023 LIGO Scientific Collaboration, University of Nevada-Las Vegas, Las Vegas, NV, USA

Present *Graduate Research Assistant*

Graduate astronomy student researcher studying compact object binaries through gravitational-wave analysis with the Laser Interferometer Gravitational-Wave Observatory (LIGO) Scientific Collaboration (LSC); advised by Dr. Carl-Johan Haster.

Aug. 2023 Graduate College, University of Nevada-Las Vegas, Las Vegas, NV, USA

May 2024 *Graduate Research Certificate Program*

A year-long professional development program that provides graduate and professional students with the necessary skills to initiate, conduct, and successfully conclude research projects. Attended monthly workshops that foster intellectual discussion of ethical issues in conducting research and best research practices. Presented my research activity at the Grad Rebel Slam.

Aug. 2022 Glikman Lab (Remote) & Masters Galaxy Group, Haverford College, Haverford, PA, USA

May 2023 *Undergraduate Student Researcher*

Conducted my undergraduate senior thesis using a radio, infrared, and optically selected sample of blue quasars to put dust-reddened red quasars in context. We found a radio-selection dependency and the fraction of red quasars to be 32% in order to complete the UKFS and W2M surveys; advised by Dr. Eilat Glikman & Dr. Karen Masters.

June 2022 Glikman Lab, Middlebury College, Middlebury, VT, USA

Oct. 2022 *Keck Northeast Astronomy Consortium Research Scholar*

Studied a candidate dual quasar system using *Hubble* Space Telescope data and completed a spectroscopic analysis of the closely separated sources with StisTools and found the possible QSO system links dust-reddening to galaxy and black hole mergers; advised by Dr. Eilat Glikman

Jan. 2022 Masters Galaxy Group, Haverford College, Haverford, PA, USA

May. 2022 *Undergraduate Student Researcher*

Researched various intrinsic parameters of galactic bars using SDSS MaNGA data, including bar length and position angle, to complete a population comparison analysis, and participated in weekly group journal presentations; advised by Dr. Karen Masters.

May 2021 Masters Galaxy Group, Haverford College, Haverford, PA, USA (Remote)

Aug. 2021 *Marian E. Koshland Integrated Natural Science Center Summer Research & Fellow*

Investigated galaxy kinematics and bar formation, performed elliptical isophote analysis with Photutils on MaNGA galaxies. Participated in HI data reduction, GalaxyZoo classifications, radon transform classifications, daily team collaborations, and weekly journal clubs.

Dec. 2020 Bryn Mawr Plasma Laboratory, Bryn Mawr College, Bryn Mawr, PA, USA (Remote)

Feb. 2021 *Undergraduate Physics Research Assistant*

Curated interactive Jupyter notebooks to cover college level physics concepts and lessons focused on electromagnetism; advised and funded by Dr. David Schaffner.

PUBLIC OUTREACH & TEACHING

Astronomy Outreach

- *Las Vegas Astronomical Society, Las Vegas, NV, USA* (Public Outreach, Education, and Observing)
Invited speaker for the Las Vegas Astronomical Society chapter public educational Star Parties and meeting speaker operating under the College of Southern Nevada Planetarium, Dr. Andrew Kerr, Director.
- *Astronomy on Tap, Astronomy Aleworks, Las Vegas, NV, USA* (Public Outreach and Education)
Co-organizer with colleagues at the Nevada Center for Astrophysics to share the excitement of astronomy and astrophysics with the general public and local community.
- *Star Party, Mt. Charleston, Las Vegas, NV, USA* (Public Outreach and Education)
Co-organizer with colleagues and students from the undergraduate Society of Physics Students chapter at the University of Nevada, Las Vegas to operate 8 inch telescopes for the general public.
- *Science Fair Judge, Canyon Springs Highschool, Las Vegas, NV, USA* (Public Outreach)
Led the adjudication of annual science fairs for middle and high school students, evaluating projects for creativity, scientific rigor, and presentation skills.

- *Strawbridge Observatory, Haverford College, Haverford, PA, USA* (Public Observing)
Operated 12 and 16 inch telescopes to explain astrophysical concepts to students and community members while navigating the night sky through the constellations.
- *Mittleman Observatory, Middlebury College, Middlebury, VT, USA* (Public Observing)
Operated 8 and 11 inch telescopes to explain basic astronomical phenomena in both English and Spanish for Middlebury Language School students and community members while promoting dark skies.

Employment

- Jan. 2024** University of Nevada-Las Vegas, Las Vegas, NV, USA
Aug. 2024 *Graduate Teaching Assistant – AST 105: Introductory Astronomy Laboratory*
 Advised by Dr. David Jeffery
- Aug. 2023** University of Nevada-Las Vegas, Las Vegas, NV, USA
Jan. 2024 *Graduate Teaching Assistant – PHYS 196: Electrical Engineering Laboratory*
 Advised by Dr. Thomas Hurst
- Jan. 2023** Haverford College Astrophysics Department, Haverford, PA, USA
May 2023 *Teaching Assistant – Intro to Coding for Physics and Astronomy*
 Advised by Dr. Andrea Lommen
- Aug. 2022** Haverford College Physics Department, Haverford, PA, USA
Dec 2022 *Grader – Advanced Classical Mechanics*
 Advised by Dr. Ted Brzinski
- Aug. 2020** Carpenter & Collier Libraries, Bryn Mawr College, Bryn Mawr, PA, USA
May 2023 *Library Technician – Student Supervisor*
 Advised by Laura Surtees & Joyce B. Angelucci
- Aug. 2020** Residential Life, Bryn Mawr College, Bryn Mawr, PA, USA
May 2022 *Hall Advisor*
 Advised by ViAnna M. Bernard
- Aug. 2019** Dining Services, Bryn Mawr College, Bryn Mawr, PA, USA
May 2023 *Student Supervisor in Erdman and New Dorm Dining Hall*
 Advised by Richard J. Chow

PUBLICATIONS

- *A Candidate Dual QSO at Cosmic Noon*
E. Glikman, R. Langgin, M. Johnstone, I. Yoon, J. Comerford, B. Simmons, H. Stacey, M. Lacy, J. O’Meara
Published 2023 July by The Astrophysical Journal Letters, Volume 951, Number 1 [ArXiv:2306.00068](#)
- *The Seventeenth Data Release of the Sloan Digital Sky Surveys: Complete Release of MaNGA, MaStar, and APOGEE-2 Data*
R. Langgin (107)
Published 2022 Mar. by the American Astronomical Society. The Astrophysical Journal Supplement Series, Volume 259, Number 2 [ArXiv:2112.02026](#)

PRESENTATIONS

- *R. Langgin, Gravitational Waveform Accuracy Requirements or Deviations from Beyond-GR?* (Graduate Seminar)
University of Nevada-Las Vegas (Las Vegas, NV), Oct. 2024
- *R. Langgin, Gravitational Wave Science: An Overview of GW Analysis and Its Implications* (Invited Presenter)
College of Southern Nevada Planetarium, (Las Vegas, NV), Sept. 2024
- *R. Langgin, A Brief Overview on Gravitational Wave Science* (Invited Speaker)
Spring Mountains Visitor Gateway, (Mt. Charleston, NV), Aug. 2024
- *R. Langgin, Gravitational Waveform Accuracy Requirements for Next Generation Detectors* (Journal Club Presentation)
University of Nevada-Las Vegas, (Las Vegas, NV), Mar. 2024
- *R. Langgin, Gravitational Waveform Accuracy Requirements for Next Generation Detectors* (Poster Presentation)
Nevada Center for Astrophysics Multi-messenger Symposium, (Las Vegas, NV), Mar. 2024
- *R. Langgin, Gravitational Waveform Accuracy Requirements for Next Generation Detectors* (Rebel Grad Slam Presentation)
University of Nevada-Las Vegas (Las Vegas, NV), Nov. 2023
- *R. Langgin, A Candidate Dual QSO at Cosmic Noon* (Journal Club Presentation)
University of Nevada-Las Vegas (Las Vegas, NV), Nov. 2023
- *R. Langgin, A Spectral Analysis of Red and Blue Quasars and Their Effect on Galactic Evolution* (Poster Presentation)
Haverford College (Haverford, PA), May 2023
- *R. Langgin, A Dual QSO at Cosmic Noon* (Presentation)
241th Meeting of the American Astronomical Society (Seattle, WA), Jan. 2023
- *R. Langgin, A Spectral Analysis of Red and Blue Quasars* (Senior Thesis Presentation)
Haverford College (Haverford, PA), Dec. 2022
- *R. Langgin, M. Johnstone. A Dual QSO at Cosmic Noon* (Presentation)
Keck Northeast Astronomy Consortium Symposium (Boston, MA), Oct. 2022
- *R. Langgin, A Dual QSO at Cosmic Noon* (Invited Presenter)
Marian E. Koshland Integrated Natural Science Center Symposium (Haverford, PA), Sept. 2022
- *R. Langgin, A Dual QSO at Cosmic Noon* (Poster Presentation)
Marian E. Koshland Integrated Natural Science Center Symposium (Haverford, PA), Sept. 2022
- *R. Langgin, Performing Elliptical Isophote Analysis with Photutils on Barred GalaxyZoo3D Masks from SDSS-IV MaNGA Galaxies* (Poster Presentation)
Marian E. Koshland Integrated Natural Science Center Symposium (Remote), Sept. 2021

HONORS, AWARDS, & DISTINCTIONS

- 2024** NASA Graduate Research Opportunity Fellow – Nevada Space Grant Consortium (NVSGC)
- 2024** ZTF Summer School (Machine Learning and AI in Time-Domain Astronomy) – Hosted by the University of Minnesota
- 2023** Rebel Grad Slam (RGS) preliminary round winner – Hosted by the University of Nevada-Las Vegas
- 2023** APS Conferences for Undergraduate Women in Physics (CUWiP) – Hosted by Princeton University, Princeton Plasma Physics Laboratory
- 2023** Marian E. Koshland Integrated Natural Science Center Scholarship awarded by Haverford College – 241st American Astronomical Meeting in Seattle, WA
- 2022** FUTURE of Physics, Women in Physics Workshop hosted by CalTech – Travel Scholarship, Nominated by Dr. Karen Masters
- 2022** Keck Northeast Astronomy Consortium (KNAC) Research Scholar – Middlebury College, Advised by Dr. Eilat Glikman
- 2021** Marian E. Koshland Integrated Natural Science Center Summer Research and Valley Fellow – Haverford College, Advised by Dr. Karen Masters