# RACHEL R. LEE

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## EDUCATION

**Purdue University** *August 2017 - May 2021*
Bachelors of Science, Physics Honors Overall GPA: 3.67/4.00
Minors in Astronomy and Mathematics Physics Honors GPA: 3.63/4.00
College of Science, Honors College

## RESEARCH INTERESTS

**Observational and Time Domain Astronomy**: Supernovae, Supernova Remnant Morphology and Energetics, Progenitor System Analysis, Stellar Evolution, Stellar Formation, Spectroscopy

## RESEARCH EXPERIENCE

**Research Assistant**, Purdue University; Department of Physics and Astronomy Jan. 2018–Present
*Advisor: Professor Dan Milisavljevic*

· Obtain and analyze data from Gaia Space Observatory to create documentation of stellar source candidates for spectroscopic analysis in order to determine locations of stars relative to the neighborhood of a supernova remnant.
· Compare Chandra X-Ray images to optical images to determine advantageous candidates for spectroscopic observation.
· Create and collaborate on observational proposals for usage of Gemini telescopes and GMOS for multi-slit spectroscopy as well as the newly commissioned NEID instrument on the WIYN 3.5m telescope.
· Assist in developing a platform to coordinate ground-based facilities and follow up transients discovered by the Large Synoptic Survey Telescope (LSST).
· Create and maintain a master list of optical observatories across the world.
· Read and chart weather data from locations across the world to provide information about probable observational capabilities.
· Compile galactic supernova candidate information.
· Present research findings at laboratory meetings and to astrophysics students.
· Review and synthesize literature to advance my research.
· Manage, analyze, and interpret large data sets.
· Collaborate with team members and act in a leadership role with junior research assistants.

**Research Assistant**, University of Notre Dame; Department of Psychology Sep. 2016–Present
*Advisor: Professor Julie Braungart-Reiker*

· Conduct research in psychology-based experiments, Families and Babies Student (FABS; NIH-R01 grant, 2016) with community families.
· Record video data and manage video inventory for research activities.
· Trained in behavioral coding of observational data.
· Organize, manage, and enter data using SPSS.
· Train new staff and research assistants on video recording equipment, control room, and procedural tasks.
· Manage and organize virtual data collection.
· Assist in the adaptation of experimental procedure to virtual format.

## Technical Experience

- Astronomical Data Processing Packages: DS9 SAOImage, Astropy, PYRAF
- Programming Languages: Python, Latex, MATLAB, Python, SPSS
- Computer Platforms: Mac OS, Microsoft Windows, Unix

## Teaching Experience

**Physics Course Tutor**, Purdue University Jan. 2021–Present

- Tutor 300+ polytechnic students in introductory mechanical physics.

**Polytechnic Physics and Math Tutoring Supervisor**, Purdue University Aug. 2021–Present

- Manage and supervise all tutors in the Polytechnic Department Physics and Math Tutoring Program.

## Outreach

**REFITT Education and Outreach Liaison** Summer 2021–Present

- Coordinate professional and amateur astronomers on a global scale as a method of performing time-sensitive observations of astronomical transients.
- Analyze and compare REFITT data to actual photometric observations in a mission to make REFITT as efficient and accurate at possible.
- Create and maintain a list of possible galactic supernova candidates as important targets for REFITT observing.
- Create and maintain an exhaustive list of observatories and amateur astronomers worldwide as our method of outreach.
- Contact and follow up with observatories and astronomers who present interest in this project.
- Provide an analysis of weather and climate patterns in high priority locations.

## Honors and Awards

- Margie and Don Bottorff Undergraduate Physics Scholarship Aug. 2019–May 2021
- David G. Seiler Physics Scholarship Aug. 2019–May 2020
- Lijuan Wang Memorial Award Aug. 2019–May 2020
- Ascarelli Fellowship Recipient Aug. 2017–May 2018
- Honors College Aug. 2017–May 2021
- Semester Honors Recipient Jan. 2019–May 2021
- Purdue University Dean's List Jan. 2020–May 2021
- Purdue Promise Scholarship Recipient Aug. 2017–May 2021
- 21st Century Scholar Recipient Aug. 2017–May 2021

## Memberships

- Purdue Undergraduate Physics Student Council, Co-Founder and Treasurer Jan. 2019–May 2021
- Women in Physics, Member Aug. 2017–May 2021
- Purdue University Astronomy Club, Member Aug. 2018–May 2021
- Society of Physics Students, Member Aug. 2018–May 2021

## Activities

**Conference for Undergraduate Women in Physics**

*University of Chicago, Jan. 2020*

- Attended conference to enrich my field of knowledge in physics and learn about opportunities as a woman in physics.
- Engaged in event activities designed to allow networking opportunities.

**Purdue Undergraduate Physics Student Council**

*Co-Founder, Treasurer (Jan. 2019–May 2021)*

· Co-founded and created the Undergraduate Physics Student Council; a council based around the goal of increasing retention within the Department of Physics and Astronomy by communicating and planning with the department head and other faculty members.

· Plan and led fundraisers and events designed the spread awareness of the club.

· Created a petition with six peers to reopen the Purdue Physics Library and make space for physics students to collaborate. After gaining over 700 signatures from students and faculty, we presented the petition to the Dean of the College of Science. Our efforts were successful and the library reopened.

**Purdue Student Government**

*Strategic Planning and Assessment Director (Aug. 2017–May 2018)*

· Assisted in the creation of Qualtrics surveys designed to optimize the experience students have at Purdue University.

· Collaborates with team members to create initiatives that promote long-term sustainability and development of Purdue Student Government.

· Helped construct and implement Purdue Student Government's two year strategic plan.

## NON-REFEREED PUBLICATIONS

8. Weil, K. E., Milisavljevic, D., Rupert, J., et al. and 17 other authors incl. **Lee, R.** "REFITT classification of SN 2021nxq (ZTF21abcpsjy)," Transient Name Server AstroNote, 182 (2021)
7. Weil, K. E., Milisavljevic, D., Andrews, M., et al. and 18 other authors incl. **Lee, R.** "REFITT classifications of optical transients using SOAR," Transient Name Server AstroNote, 30 (2021)
6. Weil, K. E., Subrayan, B. M., Milisavljevic, D., et al. and 17 other authors incl. **Lee, R.**"REFITT classifications of optical transients using SOAR," Transient Name Server AstroNote, 266 (2020)
5. Weil, K. E., Milisavljevic, D., Andrews, M., et al. and 18 other authors incl. **Lee, R.** "REFITT Discovery and Classification of SN2020abog (ZTF20acpgjac) using SOAR," Transient Name Server AstroNote, 243 (2020)
4. Weil, K. E., Milisavljevic, D., Andrews, M., et al. and 18 other authors incl. **Lee, R.** "REFITT classifications of optical transients using SOAR," Transient Name Server AstroNote, 242 (2020)
3. Weil, K. E., Milisavljevic, D., Andrews, M., et al. and 18 other authors incl. **Lee, R.**"REFITT classifications of optical transients using SOAR," Transient Name Server AstroNote, 232 (2020)
2. Weil, K. E., Milisavljevic, D., Andrews, M., et al. and 18 other authors incl. **Lee, R.** "REFITT Discovery and Classification of SN 2020zct (ZTF20acezhcf) using SOAR," Transient Name Server AstroNote, 227 (2020)
1. Weil, K. E., Milisavljevic, D., Andrews, M., et al. and 18 other authors incl. **Lee, R.** "REFITT classifications of optical transients using SOAR," Transient Name Server AstroNote, 225 (2020)

## OBSERVING PROPOSALS

2. National Optical Astronomy Observatory Proposal, **Co-I**, 2021A. Time: 0.5 Nights (2020B, Accepted). "*Precise Distance Estimates to Nearby Supernova Remnants*."
1. National Optical Astronomy Observatory Proposal, **Co-I**, 2021A. Time: 40 Hours (2020B, Accepted). "*An ORACLE for Antares*."