# ANNASTASIA HAYNIE

## PHD CANDIDATE


## CONTACT

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Los Angeles, CA


## EDUCATION

**PhD, Physics**

### University of Southern California

08/2018 - 05/2024

USC - Carnegie Observatories Fellow
Advised by Dr. Anthony Piro
Advanced to Candidacy 08/2021

**B.S., Physics**

### University of South Carolina

08/2014 - 05/2018

Frank and Nina Avignone Fellow
Advised by Dr. Steve Rodney
Minor, Astronomy

## PERSONAL PROJECTS

**IBM Data Science Certificate Program**

- Comprehensive program covering key concepts and practical skills in data science.
- Gain hands-on experience through real-world projects using various IBM databases.
- Highlighted skills:
  - Data analysis
  - Machine learning
  - Data visualization
  - Python programming
  - R programming
  - SQL querying
- Problem-solving in data-driven contexts.

**AWS Fundamentals Specialization Program**

- Series of courses to enhance skills in cloud computing with AWS services
- Hands-on experience with designing, deploying, and managing applications on AWS

## OUTREACH+MENTORSHIP

- **Graduate Association for Students in Physics**
  - Senior Advisor, 08/2022 - Present
  - President, 08/19-08/22
- **Skype-a-Scientist Program**
  - Visiting Scientist, 08/2019-Present
- **Letters to a Pre-Scientist Program**
  - STEM Pen Pal, 08/2020-Present
- **Carnegie Astro Summer Student Internship**
  - Mentor, Summers 2018-2023
- **Women in Science and Engineering Association**
  - Liaison 08/2020-08/2021

## RELEVANT SKILLS

- Python
  - Jupyter
  - Numpy
  - Pandas
  - Matplotlib
  - Scipy
  - Seaborn
- C/C++
- Data Modeling and Analysis
  - Regression Analysis
  - Monte Carlo Simulation
  - Statistics
- Git
- Scientific and Technical Writing
- Public Speaking
  - General and Technical Audiences
- Mentoring
- Project Management
- Problem Solving
- Critical and Creative Thinking
- Leadership

## WORK EXPERIENCE

### Graduate Student Researcher

University of Southern California & Carnegie Observatories 05/2019-Present

- Develop methods for analyzing and interpreting data through a combination of semi-analytic and numerical modeling that are faster than more sophisticated numerical modeling with comparable accuracy in preparation for a ~6 orders of magnitude increase in observations with upcoming telescope surveys.
- Utilize Python packages and libraries to constrain the Bayesian posteriors of analytic models that are calibrated to numerical simulations.
- Visualize data in Jupyter Notebooks to convey findings for both publication and communication with collaborators and general audiences.
- Integrate new models into existing software to optimize performance and accuracy.
- Demonstrated ability to learn new skills to solve problems and achieve project goals.
- Authored 2 peer-reviewed papers published in The Astrophysical Journal as the primary researcher with a 3rd paper as primary researcher currently in progress.
- Contributed work to large observational collaborations including the Carnegie Supernova Project and the Young Supernova Experiment.
- Awarded the Women in Science & Engineering Graduate Merit Award for outstanding research and outreach in May 2022.

### Graduate Teaching Assistant

University of Southern California 08/2018-12/2019

- Instructed ~75 students per semester in Astronomy 100: Introduction to Astronomy and Astronomy 200: Life in the Universe.
- Guided students through 7 laboratory experiments per semester additionally a semester-long project for students in Astro 200.
- Developed a series of extra-credit assignments to improve student engagement that garnered ~80% participation each semester.
- Tutored students outside of class in math, physics, science communication, and general topics in astronomy.

## PUBLICATIONS

**A. Haynie**, et. al. “Enhanced Luminosity in the Light Curves of Ultra-Stripped Helium Stars”, 2024, in prep.

W. V. Jacobson-Galan, ..., **A. Haynie**, et. al., “Final Moments II: Observational Properties and Physical Modeling of CSM-Interacting Type II Supernovae”, 2024, in prep.

**A. Haynie** & A. L Piro, “Estimating Ejecta Masses of Stripped Envelope Supernovae Using Late-Time Light Curves,” 2023, Ap. J., 956, 98.

**A. Haynie** & A. L. Piro, “Shock Breakout in Dense Circumstellar Material with Application to PS1-13arp,” 2021, Ap. J., 910, 128.

A. L. Piro, **A. Haynie**, & Y. Yao, “Shock Cooling Emission from Extended Material Revisited,” 2021, Ap. J., 909, 209.