Riley Rosener

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Education

University of Chicago — Chicago, United States
B.S. in Astrophysics with Honors, Minor in History, GPA: 3.7/4.0 — 2020–2024

Experience

W.M. Keck Observatory — Hawai'i, United States
Jeff Metcalf Intern for NIRC2 Instrument — Summer 2023

- Rewrote and translated QACITS observational software into Python
- Documented and organized code to interface with Keck's infrastructure, display data, and meet user needs
- Live-tested code on equipment, and learned about NIRC2 instrument operation to ensure functioning

University of Chicago — Chicago, United States
Research Assistant in UChicago's History Department — September 2022 –Current

- Coordinated logistics and supported facilitation of 75 student immersive history class
- Engaged with students, planned and wrote class materials, organized event details

University of Chicago — Chicago, United States
Quad Summer Scholar at UChicago's Neutrino Research Group — Summer 2022

- Analyzed Python MCMC outputs to examine detectability of theoretical Higgs scalar particle at Fermilab
- Presented research at UChicago Research Symposium and NuMI ICARUS Fermilab working group
- Created and maintained the Neutrino Group's current Voices website for potential researchers

Ryerson Astronomical Society — Chicago, United States
President of UChicago's Ryerson Astronomical Society — September 2020 –May 2024

- Organized educational talks from astronomy faculty and held public observation nights for 20-30 students weekly
- Conducted routine maintenance on historic observatory facilities and equipment

Skills

- **Programming Languages:** Python 3 (matplotlib, numpy, scipy, astropy, logging), SQL, Jupyter, IDL, Linux and Windows
- **General Tools:** Git, Excel/Office Suite, Bayesian analysis, regression modeling, data fitting and visualization, version control
- **Languages:** Latin, Ancient Greek, Russian

Projects

NIRC2 QACITS Software Revamp (Python, 2023)

- Transferred QACITS code from IDL into Python 3, creating a robust backend live-interfacing with sub-system API, implementing fast data reduction and fitting algorithm, and adding comprehensive logging capabilities

COOL-LAMPS Widely-Separated Lensed Quasar Search (IDL/IRAF, 2023)

- Filtered archival data in IDL with statistical calculations across vast parameter space to find extremely rare objects
  Resulted in a confirmed discovery, with a Hubble proposal accepted, publication COOL-LAMPS VI forthcoming

- **Examination of Theoretical Axion Properties at ICARUS (Python, 2023)**
  Investigated in Python particle properties in a neutrino detector using MCMC data, weighted histograms, and custom MCs