Joseph Havens

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EDUCATION

Bachelor of Science in Physics and Astronomy, Minor in German
Expected Graduation: May 2027
University of Kansas

RESEARCH EXPERIENCE

Undergraduate Research Assistant December 2024-Present
University of Kansas Advisor: Dr. Allison Kirkpatrick

- **Project: Dust Attenuation in SMACS and JADES Galaxies**
  - **Goal:** Analyzing and classifying Spectra from SMACS and JADES to describe dust attenuation relations as it affects a source's luminosity using multi-line attenuation modeling.
- **Project: Zooniverse Site Development**
  - **Goal:** Contributing to and refining the research team's Zooniverse site.
  - Utilize TRILOGY (proprietary image conversion software) to prepare .fits files for submission to the Zooniverse site.

Undergraduate Research Assistant February 2023-August 2024
University of Kansas Advisor: Dr. Steven Prohira

- **Goal:** Built, ran, and analyzed simulations of radio wave propagation through a medium of ice with a changing index of refraction.
- Utilized ParaPropPython (proprietary Parabolic Equation simulation), MEEP (FDTD computational electromagnetic simulation), and ray tracing to compare and analyze various simulation methods for radio wave propagation.

TEACHING & OUTREACH

Undergraduate Teaching Assistant (UGTA) [Fall 2025]
University of Kansas

- ASTR 591 - Stellar Astronomy - Dr. Allison Kirkpatrick

Society of Physics Students (SPS), KU Chapter [Fall 2024-Present]

- Member, Co-led logistics for conferences

Public Night Volunteer [Spring 2025-Present]
KU Physics & Astronomy Department

- Welcome members of the public by running telescope operation during outreach events.

RESEARCH COURSEWORK

(Graduate) Radiation and Interstellar Medium-ASTR 796 Fall 2025

- **Project:** Class project with multiple groups including PAH/silicate lines in NGC 253
  Title (WIP): A JWST MIRI-MRS Map of the Nucleus of the Nearby Starburst Galaxy NGC 253 by E.A.C. Mills et al
- **Skills:** Graduate-level education in atomic transitions, emission lines, PAHs, IFUs, and more.

Observational Astrophysics-ASTR 596 Fall 2023

- **Project:** Utilized the Breyo Observatory at Sienna College in Loudonville, NY for remote sky imaging
- **Skills:** Demonstrated hands-on skills in operating astronomical equipment and conducting observations
- Processed and reduced observational data, showcasing data analysis skills

SKILLS & ABILITIES

- **Programming Languages:** Python (proficient), LaTeX (proficient), Arduino variant of C++ (intermediate), bash (beginner)
- **Data Science Libraries:** NumPy, Pandas, Matplotlib, SciPy, Scikit-learn
- **Astro-Specific Libraries:** Astropy, Specutils, GLEAM, LMFIT
- **Computation & Imaging:** Numba (JIT performance optimization), OpenCV (image processing)
- **Cloud Data & APIs:** Google Cloud Platform (GCP), Google Sheets API (gspread), building data pipelines with REST APIs (requests, json).
- **Machine Learning:** Frameworks (TensorFlow); Models (Artificial Neural Networks).

LEADERSHIP & ACTIVITIES

Scouts BSA - Troop 249, Jayhawk Area Council

- Led a troop of 30+ scouts for three consecutive 6-month terms.

University of Kansas Men's Volleyball Club

CERTIFICATIONS AND AWARDS

- Eagle Scout - June 2020, 5 Eagle Scout Palms