Grace Krahm

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EDUCATION

Agnes Scott College **Decatur, GA**
Bachelor of Science in Astrophysics Expected May 2024
GPA: 3.996

- Honors: Elizabeth Kiss Trailblazer Scholarship 2020-Present, Dean's list 2021 and 2022, William A. Calder award in Physics and Astronomy 2023, Stukes Scholar 2023 for highest class GPA
- Relevant Coursework: Classical Mechanics, Quantum Physics, Astrophysics: Radiation, Astrophysics: Dynamics, Intermediate Observation Techniques, Thermal Physics, Nonlinear Dynamics, General Relativity

EXPERIENCE

Undergraduate Research Assistant, University of Florida **Gainesville, FL**
Research Experiences for Undergraduates (REU) May 2023-Present

- Advisor: Prof. Desika Narayanan
- Quantified the contribution of nebular line emission in SED-derive galaxy masses for high-redshift galaxies
- Created a pipeline from simulated galaxy to SED-derived galaxy mass using Simba hydrodynamical galaxy simulations, Powderday radiative transfer code, and Prospector SED fitting tools

Undergraduate Research Assistant, National Radio Astronomy Observatory (NRAO) **Charlottesville, VA**
Research Experiences for Undergraduates (REU) May 2022-Present

- Advisors: Dr. Molly Finn and Prof. Remy Indebetouw
- Identified and calculated physical properties of individual molecular clouds in the super star cluster (SSC) forming Antennae galaxies using CO, HCO+, and HCN emission data from the Atacama Large Millimeter/submillimeter Array.
- Compared properties of molecular clouds in the Antennae galaxies to both SSC-forming and non-SSC-forming galaxies to characterize the relationship between massive star formation and the properties of the molecular clouds they form in.

Learning Assistant, Agnes Scott College Resource Center for Math and Science (RCMS) **Decatur, GA**
August 2021-Present

- Staff the Resource Center for Math and Science tutoring 100-200 level math, physics, and astronomy courses.
- Communicating with students, encouraging them to be active in their learning, and finding what methods help them to learn.
- Communicating the students' needs and what teaching methods work best for them to the professors.
- Teaching students problem-solving methods they can apply to different situations.

Radial Velocity of Star Clusters, Agnes Scott College **Decatur, GA**
Astrophysics I: Radiation Research Project January-May 2022

- Advisor: Dr. Alexandra Yep
- Observed spectra of the open cluster NGC 2244 using the 0.9 m SARA (Southeastern Association for Research in Astronomy) telescope at Kitt Peak (SARA-KP) and its fiber-fed echelle spectrograph.
- Calibrated the wavelengths of the spectral lines using spectra of a thorium-argon lamp and determined the redshift of individual stars in the cluster by comparing their lines to the reference spectra of Alpha CMi.
- Calculated the radial velocities of the selected stars using the observed redshift and the Doppler effect

which averaged together to give a radial velocity estimate of the cluster of 37.2 km s^{-1} which is 11% higher than the radial velocity recorded in the Simbad astronomical database.

Undergraduate Research Assistant, Agnes Scott College **Decatur, GA**
STEM Scholars Program June 1-July 31 2021

- Advisor: Prof. Alan Koch
- Aided in the effort to determine whether or not a perfect cuboid with integer dimensions exists.
- Searched for solutions of a perfect cuboid both analytically and numerically using modular arithmetic and python programming respectively.
- Placed additional limitations on the side lengths and diagonals that a theoretical perfect cuboid must have.

HR Diagram Construction of Globular Clusters, Agnes Scott College **Decatur, GA**
Intermediate Observation Techniques Research Project January-May 2021

- Advisor: Prof. Amy Lovell
- Observed the globular clusters M53 and M79 in the filters Cousins R, Johnson V, and Johnson B using the 1m Jacobus Kapteyn SARA Telescope
- Calibrated the images and recorded the flux values in the B and V filters for 100 stars in each cluster using MaxIm DL.
- Constructed Hertzsprung-Russell (HR) diagrams of the clusters by plotting the stars' B-V color index against their flux values in the V filter. These HR diagrams where then used to estimate the ages of M53 and M79 using isochrones.

PRESENTATIONS

The University of Florida Astronomy REU Summer Student Research Symposium **Gainesville, Fl**
The Impact of Nebular Line Emission on SED-Derived Galaxy Properties August 3rd, 2023

Spring Annual Research Conference (SpARC), Agnes Scott College **Decatur, Ga**
Super Star Cluster Formation in the Antennae Overlap April 24th, 2023

Conference for Undergraduate Women in Physics (CuWip) at Auburn **Auburn, AL**
Super Star Cluster Formation in the Antennae Overlap January 21st, 2023

American Astronomical Society 241st Meeting **Seattle, WA**
Super Star Cluster Formation in the Antennae Overlap January 10th, 2023

NRAO Summer Student Research Symposium **Charlottesville, VA**
Physical Conditions of Molecular Clouds in the Merging Antennae Galaxies July 28th, 2022

Spring Annual Research Conference (SpARC), Agnes Scott College **Decatur, GA**
The Search for a Cuboid April 20th, 2022

STEM Scholars Symposium, Agnes Scott College **Decatur, GA**
The Search for a Cuboid July 28th, 2021

SKILLS

- Data processing, image calibration, and statistical analysis
- Communicating findings in both written and oral form
- Taking photometric and spectrographic images of stars and galaxies using the Southeastern Association for Research in Astronomy (SARA) telescopes.

- Planetarium operations
- Software: Python, CASA, LaTeX, MaxIm DL, Microsoft/Office Suite, and Maple
- Languages: English (native language), French (B1 on the European Framework for Language)
- Certified by the Dance Notation Bureau in beginner labanotation

PROFESSIONAL AFFILIATIONS

- American Physical Society (APS)
- Society of Physics Students (SPS)
- American Astronomical Society (AAS)