

Kiley Heflin

Education

PhD. in Physics

University of Alabama, Huntsville

August 2020

Dissertation Title: “Pulsar Timing as a Direct Probe of Galactic Dark Matter”

Advisor: Dr. Richard Lieu

MSc. in Physics

University of Alabama, Huntsville

May 2018

Advisor: Dr. Richard Lieu

BSc. in Applied and Theoretical Physics, Honors Diploma

University of Alabama, Huntsville

May 2016

Honors Thesis Title: “Inflationary Gravitational Waves and B-Mode Polarization of the Cosmic Microwave Background”

Advisor: Dr. Richard Lieu

Research Interests

Cosmology, Astrophysics, Pulsars, MSPs, Dark Matter

Research Experience

Graduate Research Assistant

August 2017-August 2019

Department of Physics, University of Alabama, Huntsville

- Studied effects of dark matter on pulsar spin-down assuming virialized orbits about the galactic center
- Researched infrared spectral intensities resulting from collision and detonation of macroscopic particle ensembles

Student Specialist

May-August 2016

National Space Science and Technology Center, University of Alabama, Huntsville

- Performed experiments with radioactive materials to test the properties of various scintillators & photomultipliers.
- Aided in the design of the TRYAD Cubesat for NASA. This included the mechanical design of the satellite, the selection of detector materials, and the programming of temperature regulators in Arduino
- Studied Terrestrial Gamma Ray Flashes (TGFs) and some high energy physics.

Student Specialist

May 2015-May 2016

Department of Physics, University of Alabama, Huntsville

- Programmed scripts relevant to pulsar cosmology

Teaching Experience

Lecturer

January 2021-Present

- Taught PH 432, Intermediate Electricity & Magnetism II
- Taught PH 112, General Physics with Calculus II
- Graded undergraduate coursework
- Wrote original lectures & exams

Part Time Lecturer

August 2020-December 2020

Department of Physics, University of Alabama, Huntsville

- Taught PH 351, Introduction to Modern Physics
- Graded undergraduate coursework
- Wrote original lectures & exams

Graduate Teaching Assistant

August 2016-August 2017,

Department of Physics, University of Alabama, Huntsville

August 2019-April 2020

- Taught and graded laboratory courses, which are offered in tandem with introductory physics courses
- Graded undergraduate and graduate coursework
- Provided physics tutoring to undergraduates

Honors and Awards

University of Alabama, Huntsville Blue Scholarship

August 2012-May 2016

- Highest scholarship offered for undergraduates at the university

Osher Lifelong Learning Scholarship

August 2012-May 2016

- Awarded to two University of Alabama, Huntsville students annually

Geeks and Nerds Scholarship

August 2012-May 2013

- Awarded to 100 students from 14 universities annually

Publications

Heflin, K. & Lieu, R. (TBD). Galactic Orbital Effects on Pulsar Timing. *Monthly Notices of the Royal Astronomical Society*. *** **Submitted & under review**

Heflin, K. (2016). Inflationary Gravitational Waves and B-Mode Polarization of the Cosmic Microwave Background. *Perpetua Journal of Undergraduate Research, Volume I (Issue I)*, pg. 34-44.

Conference Presentations

Poster Presentations

Heflin, K., Fuchs, J., Bradner, K. (2016, July). Overview of Terrestrial RaYs Analysis and Detection (TRYAD) Detectors. Poster presented at 2016 TGF Workshop, Huntsville, AL, USA.

Technical Skills

- Experience with programming languages and mathematical packages: Mathematica, Python, C++, MATLAB, C

Relevant Coursework

Classical Dynamics, Mathematical Methods, Quantum Mechanics, Electromagnetic Theory, Statistical Mechanics and Kinetic Theory, Lasers, High Energy Astrophysics, Quantum Field Theory, General Relativity, Bayesian Analysis, Stellar Astrophysics, Optical Scattering Theory, Optics in Contemporary Physics and Astronomy, Fourier Optics

References

Richard Lieu, Distinguished Professor

Department of Physics
University of Alabama, Huntsville
lieur@uah.edu

Don Gregory, Distinguished Professor

Department of Physics
University of Alabama, Huntsville
gregoryd@uah.edu

James Miller, Department Chair

Department of Physics
University of Alabama, Huntsville
phchair@uah.edu