Brooke Kimsey-Miller

CONTACT INFORMATION

Address: Astronomy Department
Swain West Hall
727 E. 3^{rd} Street
Bloomington, IN 47405

Email: bkkimsey@iu.edu
Phone: (812) 498-9120

EDUCATION

Graduate Student, Astronomy, Indiana University — Anticipated August 2024
GPA: 3.800
Thesis Project: Abundances of Star-Forming Galaxies as a Function of Density and Redshift
Advisor: Prof. John J. Salzer

B.S., Astronomy, Astronomy — August 2014 - May 2019
B.S., Physics, Physics
B.S., Mathematics, Mathematics
Indiana University
Honors Thesis Title: A Recipe for Green Pea Environments
Advisor: Prof. John J. Salzer

RESEARCH EXPERIENCE

Research Assistant, Indiana University — 2019 - Present
Advisor: Prof. John J. Salzer
Analyzing the relationship between abundance, density, and redshift of a large sample of emission-line galaxies and with z between 0.1 and 0.5. Using spectroscopic data from WIYN 3.5m and Hydra, a multi-object spectrograph.

Research Assistant, Indiana University — 2018 - 2019
Advisor: Prof. John J. Salzer
Reduced and analyzed spectroscopic data taken with the WIYN 3.5m and Hydra. Measured over 800 new spectroscopic redshifts of galaxies using cross-correlation method. My work is part of a larger project aimed at analyzing whether galaxy environment is the main factor that causes the extreme star formation rate of "Green Pea" galaxies.

NSF REU Student, Ohio Wesleyan University — Summer 2018
Advisor: Prof. Robert Harmon
Acquired, reduced and analyzed data to produce light curves of a variable star, LO Pegasi, in order to map its starspots to a 2D model. Presented results in an American Physical Society poster presentation in April 2019.

Research Assistant, Indiana University — Summer 2017
Advisor: Prof. Katherine Rhode
Mastered Python scripting and working with Image Reduction and Analysis Facility (IRAF) tasks and ds9 to analyze globular cluster candidates in external galaxies. My work was part of a larger project working with globular clusters to study galaxy formation and evolution.

TEACHING EXPERIENCE

Associate Instructor, A105 Stars and Galaxies Spring 2020
Indiana University
Introductory course for non-majors. Responsibilities included grading, holding office hours, and giving feedback to 250 students. Aided Professor in converting the course to Online during COVID-19 pandemic.
Topics included: The electromagnetic spectrum; spectral lines of point-like and extended objects; using Photoshop to create astronomical images from broadband and narrowband images.

Associate Instructor, A107 The Art of Astronomy Fall 2019
Indiana University
Introductory course for non-majors. Responsibilities included grading, holding office hours, and giving feedback to 120 students.
Topics included: The electromagnetic spectrum; spectral lines of point-like and extended objects; using Photoshop to create astronomical images from broadband and narrowband images.

Undergraduate Teaching Assistant, A105 Stars and Galaxies Spring 2019,
Indiana University
Introductory course for non-majors. Responsibilities included grading classwork and helping 150-250 students understand new material.
Topics included: The basic structure of our local neighborhood; the structure and evolution of the Sun and other stars; the properties, formation, and evolution of galaxies; the large-scale structure of the Universe; and the origin and fate of the Universe.

Undergraduate Grader, J112 Intro to College Math II Spring 2019
Indiana University
Two courses in the Spring semester and one in the Fall semester. Responsibilities included grading and providing feedback on homework for 30-40 students per course.
Topics included: Algebraic operations and equations; functions and graphing; polynomials; exponential and logarithmic functions.

OBSERVING EXPERIENCE

Perkins Observatory Summer 2018
Delaware, Ohio
Performed CCD camera observations on the 14-inch reflector campus research telescope.
5 nights, to acquire data for summer REU research project.

OUTREACH

Bartholomew County Public Library 2019
Columbus, IN
November 2019
Utilizing a simple circuit, I presented an experiment for adults and children to learn about electric potential and Ohm's Law.
December 2019
Lunar phase activity with Oreo's and observing the Moon threw an 8-in reflector telescope.

OUTREACH

Kirkwood Observatory 2019
Bloomington, IN
Co-host public observing nights on 12-inch refractor for the local community. The moon, planets, and a few Messier objects are the main objects viewed. Typical attendance is approximately 60 people per night.

Science Fest 2017 - Present
Indiana University
Participate in annual outreach science festival that provides hands-on science activities for children. Duties have included making comets, welcoming families into Kirkwood Observatory, and asking children questions about the Solar System.

Solar Eclipse 2017
Nashville, IN
As part of an all-day Saturday event to engage children in the sciences, I and two colleagues explained the Solar System and how solar eclipses work to seven groups of 20 young elementary school children.
Bloomington, IN
I and two colleagues explained the solar eclipse to 20 middle school students as part of a classroom visit.

HONORS AND AWARDS

Presidential Scholarship ($5,500/year)	2009 - 2010
21^{st} Century Scholarship ($10,000/year)	2009 - 2010
National Society of Leadership & Success	2015 - Present
21^{st} Century Scholarship ($10,000/year)	2017 - 2019
Hollis & Grete Johnson Research Prize ($400)	2019
Research Scholarship Award ($1,500)	2019

COMPUTER SKILLS

Programming Languages
Python, bash, C/C++
Software
Anaconda, ROOT, LaTeX, Mathematica, IRAF, Microsoft Office, Mira, MaxIM DL, Visual Basic

CONFERENCES AND PROCEEDINGS

[1]Jewell, A., **Kimsey-Miller, B.**, Harmon, R. O., Starspots on LO Pegasi. Poster presented at American Physical Society April Meeting 2019, Volume 64, Number 3; 2019 April 13; Denver, CO.

[2] Brunker, S. W., **Kimsey-Miller, B.**, Cousins, B., Salzer, J. Probing the Environments of Extreme Star-Forming Galaxies. Poster presented at American Astronomical Society Meeting 2019 Jan 6-10; Seattle, WA. 2019AAS...23336801B