Diana Khimey

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Education

Harvard University
Cambridge, MA, USA

A.B. in Astrophysics & Mathematics — *2018 - 2023*

- Leave of absence Fall 2020 - Fall 2021 due to COVID-19.
- Coursework: Mechanics and Relativity | Electromagnetism a Statistical Physics | Galactic and Extragalactic Astronomy | Methods of Observational Astronomy | Multivariable Calculus | Linear Algebra and Differential Equations | Sets, Groups and Topology

Gap Year Coursework

Stanford Continuing Studies — *2020 - 2021*

Machine Learning with Python

HarvardX - CS50

Introduction to Artificial Intelligence with Python
Introduction to Computer Science

ColumbiaX

Statistical Thinking for Data Science and Analytics

Skills

Computing	*Experienced:* Python | *Familiar:* C, R, SQL, Matlab, HTML, CSS
Libraries	Matplotplib | Numpy | Pandas | Scikit-learn
Software & Tools	Jupyter Notebook | Github | Mathematica | LaTeX
Languages	*Native:* English, Ukranian | *Fluent:* Russian | *Basic:* Spanish

Research Experience

Harvard-Smithsonian | Center for Astrophysics
Cambridge, MA, USA

PRISE Fellow — *May 2020 -*

Used dark matter simulations to determine how parameters affect early Universe galaxy formation in different dark matter models. Using limits of upcoming JWST telescope to determine the degeneracy of dark matter models with baryonic physics. Working with Dr. Sownak Bose and Dr. Sandro Tacchella. Publication listed below.

Researcher — *Aug. 2020 -*

Studying the kinematics of stars leaving their respective star-forming regions using new datasets on the 3D positions and kinematics of young stars and clouds. Working with Dr. Alyssa Goodman and Dr. Catherine Zucker.

Methods of Observational Astronomy - Course
Cambridge, MA, USA

Final Project — *Mar. 2020 - May 2020*

Used imaging data collected of an RR Lyrae variable star over the course of several weeks to generate a light curve for the star. Processed images, performed photometry and worked with large amounts of data. See the resulting light curve and the fit to Kepler data on my website.

Publications

Khimey, D., Bose, S. and Tacchella, S. 2020. ***MNRAS***. Submitted. Degeneracies between baryons and dark matter: the challenge of constraining the nature of dark matter with JWST

Teaching Experience

Math Fluency Initiative | Harvard University
Cambridge, MA, USA

Curriculum Development — *May 2020 -*

- Revamped the teaching of MFI classes to have a greater emphasis on the collaborative and inclusive nature of mathematics.
- Redesigned metacognitive content to allow students to understand how to make their learning more effective by embracing struggle, particularly when studying challenging math.

Team Leader — *May 2019 -*

- Taught students to have meaningful discussion about college-level math problems through weekly group and one-on-one meetings.
- Introduced students to how they will be expected to learn math: through collaboration, discussion, and discovery.

Department of Mathematics | Harvard University *Cambridge, MA, USA*

Course Assistant *Dec. 2019 -*

- Aid in the implementation of an engaging, active, student-driven learning style in the classroom.
- Work with head teaching staff to pin point student weaknesses and guide lessons.
- Hold office hours and grade homework assignments

American Museum of Natural History *New York, NY, USA*

Education Intern *Jun. 2019 - Aug. 2019*

- Focused on conveying Astronomy and Physics topics in a way that would be interesting and engaging for all age groups.
- Educated visitors on a variety of topics in the museum's halls after undergoing intensive training in informal science education which involved learning from experts in a variety of specialty fields.

Honors & Awards

2020 **Detur Book Prize**, Harvard College. One of the oldest prizes at Harvard, recognizes high academic standing.

2019 **John Harvard Scholar**, Harvard College. Awarded to students in the top 5% of their class.

Activities

Harvard Observing Project, gathering data using the Harvard Clay Telescope *Nov. 2018 -*

Student Astronomers at Harvard - Radcliffe, authorized use of the Loomis-Michael Observatory *Jan. 2019 -*

Kirkland House Intramural Crew, rower for the Kirkland team *Jan. 2020 -*