

EMILY BIERMANN

224 Hickory Hill Rd, North Andover, MA 01845 * (978) 382-0736 * emily.biermann@stonybrook.edu

EDUCATION

Stony Brook University, Stony Brook, NY

May 2019

Bachelor of Science degree in physics and astronomy

G.P.A. 3.840 /4

Senior Thesis: Composing an Answer Key for Weighing the Giant's Photometric Redshifts

Graduated Magna Cum Laude with departmental honors in physics and astronomy

HONORS AND AWARDS

May 2019 Elizabeth U. Baranger Predoctoral Fellowship Recipient at University of Pittsburgh

May 2019 University of Pittsburgh Kenneth P. Dietrich School of Arts and Sciences Fellowship for Summer 2020

May 2019 Received departmental honors in astronomy and departmental honors in physics

Fall 2015 – Spring 2019 Dean's List

April 2018 Sigma Pi Sigma National Physics Honor Society Member

April 2018 Spirit of Stony Brook Director's Award (\$750 Scholarship)

Feb. 2017 New York Academy of Sciences NEXXT Scholar

April 2015 Stony Brook Undergraduate Provost's Scholarship (\$10,000/yr for four years)

PRESENTATIONS

April 2019 "Stony Brook Astronomy Colloquium: Undergraduate Showcasing". Presented my senior research paper on Weighing the Giants' photometric redshifts.

April 2019 "URECA Celebration: Undergraduate Symposium". Poster presentation for undergraduate research. Presented poster on detection of lepton flavor violation with the Electron Ion Collider.

April 2018 "URECA Celebration: Undergraduate Symposium". Poster presentation for undergraduate research. Presented poster on my work with instrument calibration for the IceCube experiment.

June 2017 "Ultimate Science Sunday" at the World Science Festival in New York City. Participated in poster presentation on the IceCube experiment.

March 2017 "IceCube Masterclass: Connecting students and researchers through IceCube". Assisted in planning and facilitating activities for high school students to learn about IceCube.

July 2016 "SSO Orientation Undergraduate Panel". Served on a panel of Science and Society Fellows at freshman orientation.

WORK AND RESEARCH EXPERIENCE

High School Tutor, Voyage Academics
Stony Brook, NY

Jan. 2019 – Present

- Tutor high school students in STEM courses
- Provide test preparation for SAT, ACT, and Regents tests
- Advise students in academic success

Astronomy Undergraduate Researcher, Stony Brook University
Cosmology Group, Dr. Anja von der Linden

Jan. 2019 – Present

- Completed a senior research paper leading to departmental honors in astronomy
- Study weak lensing of galaxy clusters to better understand the structure of the universe
- Match catalogs of galaxy clusters using topcat software and python code.
- Compare photometric redshift measurements to spectroscopic redshift measurements
- Determine accuracy of photometric redshift measurements from “Weighing the Giants” Catalog

Research Assistant, Lawrence Berkeley National Labs Nuclear Division
Electron Ion Collider, Dr. Ernst Sichtermann

May 2018 – May 2019

- Paid position at Lawrence Berkeley National Labs Summer 2018, now remote work for college credit
- Study lepton-flavor violation observation by detecting tracks with a displaced vertex
- Rewrite existing MATLAB detector simulation code to study lepton flavor-violation events
- Select and implement event generator to interface with detector simulation
- Write algorithm for vertexing events using reconstructed particle tracks

Physics Undergraduate Researcher, Stony Brook University
IceCube Experiment, Dr. Joanna Kiryluk

Dec. 2016 – May 2018

- Reconstruct “flasher” data using big data parallel computing on Linux cluster at University of Wisconsin in Madison
- Analyze h5 data files using python’s pylab package
- Explore effects of flasher width, brightness, and location on reconstruction
- Compare accuracy of reconstruction using different ice models

ACTIVITIES AND APPOINTMENTS

Drum Major, Stony Brook University
Spirit of Stony Brook Marching Band

May 2016 – May 2019

- Conduct and perform mace routine at all home football games
- Teach members marching and musical skills during bandcamp and rehearsals
- Instruct a conducting course for drum major applicants
- Work closely with other two drum majors and director to ensure excellence of the program

Common Purpose Alumna, SUNY Global Center in NYC
Common Purpose Global Leader Experience

July 2018

- Attended four day conference for select SUNY students centered around cultural intelligence, leadership, and community impact.
- Gained insight through conversations with leaders within the New York City Community

Science and Society Undergraduate College Fellow, Stony Brook University
Stony Brook Undergraduate Colleges

Dec. 2015 – Dec 2016

- Served as a teaching assistant for a freshman 101 seminar
- Participated in a leadership and education course

SKILLS

Programming Languages: Python, MATLAB, Fortran, C++

Operating Systems: Linux, Windows, Mac OS

Applications: LaTeX, github, Wolfram Mathematica, Microsoft Excel, Microsoft Office, Photoshop

Astronomy Software: CCDSoft, ds9, pyraf, Source Extractor, topcat, Cartes du Ciel

Observing Equipment: Mt. Stony Brook 14-inch telescope, CCD cameras, Spectrographs, Stony Brook Educational Radio Interferometer