Samantha Wu

408-504-0346 samanthachloewu@berkeley.edu 2603 Benvenue Ave. #4, Berkeley, CA, 94704

Education

University of California, Berkeley - Berkeley, CA
A.B. Applied Mathematics - Quantum Mechanics concentration, Major GPA 4.0 / 4.0
A.B. Astrophysics, Major GPA 3.95/4.0
Overall GPA 3.98/4.0

Experience

RESEARCHER, DARK COSMOLOGY CENTER IN COPENHAGEN, DENMARK AND UC SANTA CRUZ – MAR. 2018–PRESENT

Worked in computational and theoretical astrophysics under the supervision of Prof. Enrico Ramirez-Ruiz. Currently investigating high-energy phenomena with 3D hydrodynamical simulations in the FLASH code that model stars with realistic stellar profiles from the MESA stellar evolution code. Also simulating the effects of different magnitudes of super-Eddington accretion in tidal disruption events in the radiation GRMHD code HARMRAD with Dr. Jane Dai to expand upon her unified TDE model.

UNDERGRADUATE RESEARCHER, UC BERKELEY DEPARTMENT OF ASTRONOMY – 2016-2018

Worked on computational and theoretical astrophysics research. Tested numerical methods for general-relativistic magnetohydrodynamics with Dr. Philipp Mösta. With Dr. Eric Coughlin, researched super-Eddington accretion in tidal disruption events by testing the Zero-Bernoulli Accretion model using simulated quantities. Continuing work on implementing the Bondi solution in Pyro, a 2D hydro code in Python, in preparation for further exploration of the Bondi problem.

MATHEMATICS/STATISTICS TUTOR, UC BERKELEY STUDENT LEARNING CENTER – 2015-2018

Tutored UC Berkeley students in mathematics on a drop-in basis at the Student Learning Center. Supported all core classes required for the Applied Math Major and all introductory calculus courses offered by the university.

STUDY GROUP LEADER, UC BERKELEY STUDENT LEARNING CENTER – JAN 2016-DEC 2016

Taught calculus to 30-40 UC Berkeley undergraduates twice a week in Spring 2016 in group format, sections affiliated with Prof. Paulin's two lectures of Math 1B. In Fall 2016, taught discrete mathematics to 20-30 UC Berkeley undergraduates twice a week in group format, sections affiliated with Prof. Stankova's Math 55 lecture. Lessons covered topics from propositional logic and graph theory to combinatorics and probability.

Publications

Super-Eddington Accretion in Tidal Disruption Events: the Impact of Realistic Fallback Rates on Accretion Rates, MNRAS, 478, 3016-3024 (Published on 19 Apr 2018)
Samantha Wu, Eric R. Coughlin, Chris Nixon

Recovery schemes for primitive variables in general-relativistic magnetohydrodynamics, ApJ, 859(1), 71 (Published on 24 May 2018)
Daniel M. Siegel, Philipp Mösta, Dhruv Desai, Samantha Wu

Presentations

"Super-Eddington Accretion in Tidal Disruption Events: the Impact of Realistic Fallback Rates"
UC Berkeley Summer Research Symposium, 8/2017

"The Fate and Long Term Evolution of Massive Stellar Mergers"
233rd Meeting of the American Astronomical Society, 1/2019

Awards

2018: Highest Distinction in General Scholarship - UC Berkeley College of Letters and Science
Honors for overall achievement at UC Berkeley, roughly equivalent to summa cum laude.

2018: Department Citation - UC Berkeley Department of Astronomy
For outstanding scholarship by a graduating senior with major in Astrophysics or joint major in Physics and Astrophysics.

2018: Charles E. Murgia Prize for Elementary Latin - UC Berkeley Department of Classics

2017, 2016, 2014: The Leadership Award - Cal Alumni Association
A one-year, merit-based scholarship that recognizes undergraduate students at UC Berkeley who demonstrate innovative, initiative-driven leadership impacting their academic, work, or community environments. Three-time recipient.