Samantha C. Wu

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Education

California Institute of Technology - Pasadena, CA
Ph.D. in Astrophysics – 2024

California Institute of Technology - Pasadena, CA
M.S. in Astrophysics - 2021, GPA 4.1/4.0

University of California, Berkeley - Berkeley, CA
A.B. Applied Mathematics and Astrophysics – 2018, GPA 3.98/4.0

Research Appointments

2024-present: CTAC Fellow, Carnegie Observatories

2024-present: Visiting Scholar, CIERA/Northwestern University

2019-2024: Graduate Student, California Institute of Technology

2018-2019: Junior Specialist, UC Santa Cruz and Niels Bohr Institute at University of Copenhagen

Publications

Black Hole Survival Guide: Searching for Stars in the Galactic Center That Endure Partial Tidal Disruption, 2025 *ApJ* (accepted)
Bush, R.C., Wu, S.C., Everson, R.W., Yarza, R., Murguia-Berthier, A., and Ramirez-Ruiz, E.

Multiphase Shock Cooling Emission in Ultrastripped Supernovae, 2025 *ApJ* 987 149
Haynie, A., Wu, S.C., Piro, A.L., and Fuller, J.

Probing Presupernova Mass Loss in Double-peaked Type Ibc Supernovae from the Zwicky Transient Facility, *ApJ* 972 91
Das *et al*. *incl*. Wu, S.C.

Merger Precursor: Year-long Transients Preceding Mergers of Low-mass Stripped Stars with Compact Objects, 2024 *OJA* 82
Tsuna, D., Wu, S.C., Fuller, J., Dong, Y., and Piro, A.L.

SN 2023zaw: An Ultrastripped, Nickel-poor Supernova from a Low-mass Progenitor, *ApJL* 969 L11
Das *et al*. *incl*. Wu, S.C.

Bright Supernova Precursors by Outbursts from Massive Stars with Compact Object Companions, 2024 *ApJ* 966 30
Tsuna, D., Matsumoto, T., Wu, S.C., and Fuller, J.

On the damping of tidally driven oscillations, 2024 *MNRAS* 527 2288
Dewberry, J.W., and Wu, S.C.

Tidal migration of exoplanets around M-dwarfs: frequency-dependent tidal dissipation, 2024 *ApJ* 963 34
Wu, S.C., Dewberry, J.W., and Fuller, J.

Extreme Mass Loss in Low-mass Type Ib/c Supernova Progenitors, 2022 *ApJL* 940 L27
Wu, S.C. and Fuller, J.

Dynamical Unification of Tidal Disruption Events, 2022 *ApJL* 937 L28
Thomsen *et al*. *incl*. Wu, S.C.

Wave-driven Outbursts and Variability of Low-mass Supernova Progenitors, 2022 *ApJ* 930 119
Wu, S.C. and Fuller, J.

Wave-driven Mass Loss of Stripped Envelope Massive Stars: Progenitor-dependence, Mass ejection, and Supernovae, 2021 *ApJ* 923 41
Leung, Wu, S.C., and Fuller, J.

Successful Common Envelope Ejection and Binary Neutron Star Formation in 3D Hydrodynamics, 2020 *MNRAS* (submitted)
Law-Smith *et al. incl*. Wu, S.C.

A Diversity of Wave-driven Pre-supernova Outbursts, 2021 *ApJ* 906 3
Wu, S.C. and Fuller, J.

The Art of Modeling Stellar Mergers and the Case of the B[e] Supergiant R4 in the Small Magellanic Cloud, 2020 *ApJ* 901 44
Wu, S.C., Everson, R.W., Schneider, F.R.N., Podsiadlowski, P., and Ramirez Ruiz, E.

Super-Eddington Accretion in Tidal Disruption Events: the Impact of Realistic Fallback Rates on Accretion Rates, 2018 *MNRAS* 478 3016
Wu, S.C., Coughlin, E.R., and Nixon, C.

Recovery schemes for primitive variables in general-relativistic magnetohydrodynamics, 2018 *ApJ* 859 71
Siegel *et al*. *incl*. Wu, S.C.

Selected Research Presentations

"Mass loss mechanisms in interacting supernova progenitors"
GRAPPA Seminar at University of Amsterdam, 02/2023

Invited Review on Wave-driven Pre-Supernova Outbursts
MIAPbP "Interacting Supernovae" Workshop, 02/2023

"Interpreting unusual evolution of interacting supernova progenitors"
UC Berkeley TAC Seminar, 10/2022

"Wave-driven outbursts and variability of low-mass supernova progenitors"
240th meeting of the American Astronomical Society, 6/2022

"Unusual evolution of massive stars"
UCSC GAFD Seminar, 10/2021

STEM Outreach and Professional Service

"How to Rip Apart a Star"
Sequoia National Park Dark Sky Festival Lecture Speaker, 09/2022
Caltech Astronomy Outreach Stargazing Lecture Speaker, 01/2022

2021-2022: Graduate Representative on Caltech Astronomy Admissions Committee

Caltech FUTURE Ignited and FUTURE of Physics 2021 Science Presenter

2020-2024: Caltech Gender Minorities and Women in Physics, Mathematics, and Astronomy (GWIPMA) Committee Member; GWIPMA Co-President from 2022-2023

Teaching/Mentorship

2022-2023: Caltech Connection mentor for Tuojin Yin, Pasadena City College (now at University of Southern California bachelor's program in physics)

2021-Present: UC Santa Cruz LAMAT REU mentor for Rewa Clark Bush, Cabrillo College - Wesleyan University MA - Yale Astronomy Ph.D. student

Spring 2021: Ay1 Introduction to Astronomy TA

Winter 2021: Ay 21 Galaxies and Cosmology TA

Fall 2020: Ay 101 Physics of Stars TA

2015-2018: Mathematics/Statistics Tutor, UC Berkeley Student Learning Center

2016: Calculus (Math 1b) and Discrete Mathematics (Math 55) Study Group Leader, UC Berkeley Student Learning Center

Honors and Awards

2021 NSF Graduate Research Fellowship

2019 Virginia Gilloon Graduate Fellowship - California Institute of Technology

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.

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.