William M. Wolf

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EDUCATION

Doctor of Philosophy, Physics — September 2017
University of California, Santa Barbara, Santa Barbara, CA
Advisors: Lars Bildsten and Andy Howell
Thesis: Supersoft Emission from Thermonuclear Burning on Hydrogen-Accreting White Dwarfs

Master of Arts, Physics — April 2013
University of California, Santa Barbara, Santa Barbara, CA
Advisors: Lars Bildsten and Andy Howell

Bachelor of Science, Physics
Eastern Illinois University, Charleston, IL
University Honors; Summa Cum Laude
Summer 2009 REU at U. of Rochester
- Advisor: Eric Blackman
- Topic: Astrophysical Jets

Bachelor of Arts, Mathematics — May 2010
Eastern Illinois University, Charleston, IL
University Honors; Summa Cum Laude
Departmental Honors
- Advisor: Leo Comerford
- Thesis: Conjugacy in Hyperbolic Groups

ACADEMIC EXPERIENCE

Postdoctoral Research Associate — September 2017 – Present
School of Earth and Space Exploration, Arizona State University

Graduate Research Assistant — June 2011 – September 2017
Department of Physics, UC Santa Barbara

Graduate Teaching Assistant — September 2010 – May 2016
Department of Physics, UC Santa Barbara
- Served as an instructor for lab sections and aide in open lab time for the following courses:
  - PHYS 134: Observational Astrophysics (Spring 2012)
  - PHYS 3L: Introductory Physics for Engineers Lab (Fall 2011, Fall 2010)
- Served as a facilitator for discussion sections and/or a grader for the following courses:
  - PHYS 133 Galaxies and Cosmology (Winter 2012)
  - PHYS 1: Introductory Physics for Engineers (Winter 2012)
  - PHYS 133: Stellar Structure (Fall 2011, Fall 2010)
  - ASTRO 2: Introductory Cosmology (Spring 2011)
  - ASTRO 1: Introductory Astronomy (Winter 2011)
- Helped with instruction of the graduate course PHYS 232: Stellar Structure as a resource for students in using the 1D stellar evolution software instrument `MESA star` (Fall 2013) and as a guest lecturer (Spring 2016).

Mentor — June 2013 – June 2015
Department of Physics, UC Santa Barbara
- Closely mentored a visiting undergraduate student, Timothy Cunningham, on a project that would later become his Masters' thesis. Taught concepts of radiative transfer and stellar structure as well as more general skills like figure design and academic writing. Timothy is now a doctoral student at the University of Warwick.

PUBLICATIONS

7. Prajs, S.; Sullivan, M.; Smith, M.; Levan, A.; Karpenka, N. V.; Edwards, T. D. P.; Walker, C. R.; **Wolf, William M.**; Balland, C.; Carlberg, R.; Howell, A.; Lidman, C.; Pain, R.; Pritchet, C.; Ruhlmann-Kleider, V. The Volumetric Rate of Superluminous Supernovae at z 1. 2016, Monthly Notices of the Royal Astronomical Society. Volume 463. Issue 2. 16pp.

6. Arcavi, I.; **Wolf, William M.**; Howell, D. A.; Bildsten, L.; Leloudas, G.; Hardin, D.; Prajs, S.; Perley, D. A.; Svirski, G.; Gal-Yam, A.; Katz, B.; McCully, C.; Cenko, S. B.; Lidman, C.; Sullivan, M.; Valenti, S.; Astier, P.; Balland, C.; Carlberg, R. G.; Conley, A.; Fouchez, D.; Guy, J.; Pain, R.; Palanque-Delabrouille, N.; Perrett, K.; Pritchet, C. J.; Regnault, N.; Rich, J.; and Ruhlmann-Kleider, V. Rapidly Rising Transients in the Supernova-Superluminous Supernova Gap. 2016, The Astrophysical Journal, Volume 819, Issue 1, article id. 35, 22pp.

5. Soraisam, M. D.; Gilfanov, M.; **Wolf, William M.**; and Bildsten, L. Population of post-nova supersoft X-ray Sources. 2016, The Monthly Notices of the Royal Astronomical Society, Volume 455, Issue 1, p.668-679. January 2016.

4. Cunningham T.; **Wolf, William M.**; and Bildsten, L. Photoionization Heating of Nova Ejecta by the Post-outburst Supersoft Source. 2015, The Astrophysical Journal, Volume 803, Issue 3, article id. 76, 7pp.

3. Tang, S.; Kaplan, David L.; Phinney, E. S.; Prince, Thomas A.; Breton, Rene P.; Bellm, E.; Bildsten, L.; Cao, Y.; Kong, A. K. H.; Perley, D. A.; Sesar, B.; **Wolf, William M.**; and Yen, T.-C. Identification of the Optical Counterpart *Fermi* Black Widow Millisecond Pulsar PSR J1544+4937. 2014, The Astrophysical Journal Letters, Volume 791, article id. L5, 5pp.

2. Tang, S.; Bildsten, L.; **Wolf, William M.**; Li, K. L.; Hong, A. K. H.; Cao, Y.; Cenko, B. S.; De Cia, A.; Kasliwal, M. M.; Kulkarni, S. R.; Laher, R. R., Masci; F., Nugent, P. E.; Perley, D. A.; Prince, T. A.; and Surace, J. An Accreting White Dwarf Near the Chandrasekhar Limit in the Andromeda Galaxy. 2014, The Astrophysical Journal, Volume 786, Issue 1, article id. 61, 8pp.

1. **Wolf, William M.**; Bildsten, L.; Brooks, J.; and Paxton, B. 2013. Hydrogen Burning on Accreting White Dwarfs: Stability, Recurrent Novae, and the Post-nova Supersoft Phase. 2013, The Astrophysical Journal, Volume 777, Issue 2, article id. 136, 15 pp.

MANUSCRIPT IN PREPARATION

Wolf, William M.; Townsend, R. H. M.; and Bildsten, L. Oscillations in Post-Outburst Novae. To be submitted to the Astrophysical Journal August 2017.

LECTURES

Public Lectures

2. **Wolf, William M.** Clasical Novae: Inside Out Stars Evolving in Reverse. Astronomy on Tap Santa Barbara, M8RX, Santa Barbara, CA, USA, November 16, 2016.

1. **Wolf, William M.** Stellar Explosions. Retirement Symposium for Professor Jim Conwell, Eastern Illinois University, Charleston, Illinois, USA, November 6, 2015.

Invited Talks

2. **Wolf, William M.** Theory of Nova Thermonuclear Runaways. Conference on Shocks and Particle Acceleration in Novae and Supernovae. Simons Foundation and Columbia University, New York, New York, USA, June 23-25, 2016.

1. **Wolf, William M.** Nova Populations: Models vs. Observations. Stellar Remnants at the Junction: Comparing Accreting White Dwarfs, Neutron Stars, and Black Holess. Junction, Texas, USA, May 2-6, 2016.

Contributed Talks

6. **Wolf, William M.** & Bildsten, L. Helium Flashes on Steadily Burning White Dwarfs. Twentieth European White Dwarf Workshop. University of Warwick, Coventry, CV4 7AL, United Kingdom, July 25 - 19, 2016.

5. **Wolf, William M.**, Cunningham, T., & Bildsten, L. Photoionization Heating of Nova Ejecta. Physics of Cataclysmic and Compact Binaries. Columbia University, New York, USA, October 30 - November 2, 2014.

4. **Wolf, William M.**, Tang, S., Bildsten, L., et al. Post-nova Supersoft Sources, Recurrent Novae, and the Fastest Recurrent Novae Yet Discovered. Type Ia Supernovae: Progenitors, Explosions, and Cosmology. University of Chicago, Chicago, USA, September 15-19, 2014.

3. **Wolf, William M.**, Bildsten, L. Helium Flashes on Steadily Burning White Dwarfs. Thirteenth Annual Theoretical Astrophysics in Southern California Meeting, UCLA, Los Angeles, California, USA, December, 2013.

2. **Wolf, William M.**, Bildsten, L., Brooks, J., and Paxton, B. Steady State Burning on White Dwarfs and Recurrent Novae. Observational Signatures of Type Ia Supernova Progenitors II, Lorentz Center, Leiden, The Netherlands, September 2013.

1. **Wolf, William M.**, Bildsten, L., Brooks, J., and Paxton, B. MESA Models for Accreting White Dwarfs with Stable Burning. Twelfth Annual Theoretical Astrophysics in Southern California Meeting, Carnegie Observatories, Pasadena, California, USA, November, 2012.

SERVICE

MESA Users List 2012 – Present

- Ask and answer questions relating to the installation and use of the `MESA` software instrument.
- See archive of contributions here: `http://bit.ly/2pH0VIa`

Teaching Assistant, MESA Summer School Summers 2012 – Present

- Helped to organize and execute laboratory excercies for the annual `MESA` summer school.
- Assisted the following lecturers and topics:
  - Pablo Marchant: Stellar Rotations in Binary Systems August 2017
  - Jim Fuller: Wave Transport in Stars August 2016
  - Craig Wheeler: Massive Star Explosions August 2015
  - Lars Bildsten: Stellar Response to Mass Loss August 2014
  - Lars Bildsten: Helium Core Burning August 2013
  - Lars Bildsten: Accreting White Dwarfs August 2012

Referee, Astrophysical Journal 2014 – Present

- Refereed four articles for publication in the Astrophysical Journal

Webmaster, UCSB Astronomy and Astrophysics 2014 – 2017

- Completely redesigned website and kept it up to date, accounting for changes in faculty, postdocs, and students. Implemented selected research, faculty search, automatic "recent papers on the arxiv" features.
- `http://www.physics.ucsb.edu/~astrogroup`

COMPUTER SKILLS

- Programming Languages: Ruby, Python, Mathematica, IDL, and Fortran 95
- Markup Languages: LaTeX, Markdown
- Internet Tools: HTML5, CSS3, Javascript (JQuery, CoffeeScript), Bootstrap, Ruby on Rails (Rspec, Cucumber)
- Scientific Packages: Numpy, Scipy, Matplotlib, Tioga
- Scientific Software Instruments: MESA, Cloudy
- Operating Systems: Mac, Unix/Linux.
- Version Control Systems: Git

CODING PROJECTS

Here are several tools I've written to aid in the use of `MESA` and analyzing the data it produces. All are open source and available through Github. These are detailed on the "Projects" section of my web page: `http://wmwolf.github.io/projects/`.

MesaScript

- Powerful domain-specific language for creating complex inlists
- Written in Ruby
- `http://wmwolf.github.io/MesaScript/`

MesaReader

- Eases access to `MESA` output for plotting or analysis
- Python: `http://wmwolf.github.io/py_mesa_reader/`
- Ruby/Tioga: `http://wmwolf.github.io/MESA_Reader/`

Mesa CLI

- Command line interface for automating many common tasks in MESA
- Written in Ruby
- `http://wmwolf.github.io/mesa_cli/`