

# William M. Wolf

## Address

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## EDUCATION

- Doctor of Philosophy*, Physics expected September 2017  
University of California, Santa Barbara, Santa Barbara, CA  
Advisors: Lars Bildsten and Andy Howell  
Thesis: Supersoft Emission from Hydrogen-Accreting White Dwarfs
- Master of Arts*, Physics April 2013  
University of California, Santa Barbara, Santa Barbara, CA  
Advisors: Lars Bildsten and Andy Howell
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| <p><i>Bachelor of Science</i>, Physics <span style="float: right;">May 2010</span><br/>Eastern Illinois University, Charleston, IL<br/>University Honors; Summa Cum Laude<br/>Summer 2009 REU at U. of Rochester</p> <ul style="list-style-type: none"><li>• Advisor: Eric Blackman</li><li>• Topic: Astrophysical Jets</li></ul> | <p><i>Bachelor of Arts</i>, Mathematics<br/>Eastern Illinois University, Charleston, IL<br/>University Honors; Summa Cum Laude<br/>Departmental Honors</p> <ul style="list-style-type: none"><li>• Advisor: Leo Comerford</li><li>• Thesis: Conjugacy in Hyperbolic Groups</li></ul> |
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## ACADEMIC EXPERIENCE

- Research Assistant* June 2011 – Present  
Department of Physics, UC Santa Barbara
- Studied hydrogen accretion and burning on white dwarf stars, focusing on the resulting emission of supersoft X-rays. Worked primarily with Lars Bildsten.
  - Searched for superluminous supernovae in the Supernova Legacy Dataset dataset. Worked primarily with Andy Howell on this project.
- 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.; Pritchett, C.; Ruhlmann-Kleider, V. The Volumetric Rate of Superluminous Supernovae at  $z \sim 1$ . 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.; Pritchett, 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 May 2017 – June 2017.

## LECTURES

## Public Lectures

2. **Wolf, William M.** Classical 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 Holes. 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/2pHOVIa>

*Teaching Assistant, MESA Summer School* Summers 2012 – Present

- Helped to organize and execute laboratory exercises for the annual MESA summer school.
- Assisted the following lecturers and topics:
 

– 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: L<sup>A</sup>T<sub>E</sub>X, 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

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**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/](http://wmwolf.github.io/py_mesa_reader/)
- Ruby/Tioga: [http://wmwolf.github.io/MESA\\_Reader/](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/](http://wmwolf.github.io/mesa_cli/)