William M. Wolf

CONTACT INFORMATION

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CURRENT POSITION

Department of Physics at the University of California Santa Barbara **2010 - Present**
Graduate student under advisement of Lars Bildsten

PERSONAL INFORMATION

Date of Birth: October 28, 1987
Nationality: American

RESEARCH INTERESTS

Theoretical stellar astrophysics, accreting white dwarfs, novae, supernovae.

EDUCATION

University of California Santa Barbara, Santa Barbara, California USA

Doctor of Philosphy: Physics
- Advisor: Lars Bildsten
- Started: September 2010
- Expected graduation: June 2017

Master of Arts: Physics
- Started September 2010
- Completed: June 2013

Eastern Illinois University, Charleston, Illinois USA

Bachelor of Science: Physics; **Bachelor of Arts**: Mathematics
- Started: August 2006
- Completed: May 2010
- Graduated Summa Cum Laude
- University Honors
- Departmental Honors in Mathematics (advisor: Leo Comerford)

ACADEMIC EXPERIENCE

University of California Santa Barbara, Santa Barbara, California USA

Research **September, 2010 - present**

In addition to main research with Lars Bildsten on theoretical studies of accreting white dwarf stars, also did observational work with Andy Howell concerning superluminous supernovae.

Teaching **September 2010 - December, 2013**

Taught various discussion sections and labs for undergraduate courses for majors and non-majors. Most recently assisted advisor in teaching a graduate course on stellar astrophysics, including coaching students through using an open source code to solve problems and do a research project.
- PHYS 3L Introductory Physics for Engineers Laboratory, Fall 2010 and Fall 2011: Lab TA
- PHYS 132 Stellar Structure, Fall 2010 and Fall 2011: Grader
- ASTRO 1 Introductory Astronomy, Winter 2011: Discussion Section
- ASTRO 2 Introductory Cosmology, Spring 2011: Discussion Section
- PHYS 1 Introductory Physics for Engineers, Winter 2012: Discussion Section
- PHYS 133 Galaxies and Cosmology, Winter 2012: Grader
- PHYS 134 Observational Astrophysics, Spring 2012: Lab TA
- PHYS 232 Stellar Structure (Graduate), Fall 2013: One-on-one help
- PHYS 232 Stellar Structure (Graduate), Sprint 2016: Guest Lecturer

Service

- Active on the MESA users list **2012 - Present**
  `https://sourceforge.net/p/mesa/mailman/search/?q=%22William+Wolf%22&mail_list=mesa-users`
- Referee for the Astrophysical Journal **2014 - Present**
- UCSB Astronomy and Astrophysics webmaster **2014 - Present**
  `www.physics.ucsb.edu/~astro`
- Five-time teaching assistant for `MESA` summer school under the following lecturers:
  - 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**

Invited Talks

1. **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.
2. **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.
3. **Wolf, William M.** Stellar Explosions. Retirement Symposium for Professor Jim Conwell, Eastern Illinois University, Charleston, Illinois, USA, November 6, 2015.

Contributed Talks

1. **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.
2. **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.
3. **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.
4. **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.
5. **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.
6. **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.

Publications

1. 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.
2. 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.

3. 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.
4. 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.
5. 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.
6. **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.

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: Tioga (plotting package), Numpy, Scipy, Matplotlib
- Scientific Codes: MESA, Cloudy
- Operating Systems: Mac, Unix/Linux.
- Version Control Systems: Git

Coding Projects

I've developed a small number of packages and tools to aid working with the 1D stellar evolution code `MESA` and analyzing the data it produces. All are open source and available through Github.

MesaScript

- A domain-specific language for dynamically creating inlists (configuration files) for use with `MESA star`. Essentially allows for templating of inlists by allowing variables, conditionals, loops, and functions in the creation of inlists.
- Written in Ruby
- `http://wmwolf.github.io/MesaScript/`

MesaReader

- Package to make reading in `MESA` output for plotting or analysis purposes dead simple. Mostly used to make publication quality plots out of MESA data, but does no plotting on its own.
- Written in Python and Ruby (versions for both)
- Python: `http://wmwolf.github.io/py_mesa_reader/` ("Blessed" by the `MESA` community: `http://mesa.sourceforge.net/output.html`)
- Ruby/Tioga: `http://wmwolf.github.io/MESA_Reader/`

Mesa CLI

- A command line interface for doing many common tasks in MESA, including updating/installing a new version of MESA, opening defaults files, making new work directories, copying and cleaning up test suite cases, and more.
- Written in Ruby
- `http://wmwolf.github.io/mesa_cli/`