Josiah Schwab

Los Gatos, CA -- jschwab@gmail.com -- (617) 823-4776
https://github.com/jschwab -- https://www.linkedin.com/in/josiah-schwab/

Skills

Software development. Independent and collaborative research. Troubleshooting and debugging complex systems. Written and verbal technical communication.

Experienced with: Python (including NumPy, SciPy, Matplotlib, Django), Fortran, bash; git, svn, GitHub; Linux, MacOS; emacs; LaTeX, Markdown/Jekyll, ReST/Sphinx

Experience

Waymo / Software Engineer
November 2021 - PRESENT

Simulating and evaluating the performance and safety of the Waymo self-driving car

UC Santa Cruz / Postdoctoral Researcher
August 2016 - November 2021

Developer of the open-source stellar evolution software *MESA* (1000+ users)

- Designed and refined testing infrastructure, reducing the time to identify regressions from days to a few hours
- Led migration of version control system from SVN to Git/GitHub, increasing developer productivity and community engagement
- Rearchitected, refactored, and documented microphysics modules, enhancing and extending core capabilities and enabling new kinds of stellar models
- Co-directed annual MESA Summer School and trained over 200 researchers in effective use of the software through intensive, hands-on tutorials

Independent researcher in stellar astrophysics

- Communicated scientific results in 32 peer-reviewed papers (12 first author) and 20 conference and seminar presentations
- Mentored student researchers, including supervising 2 undergraduate theses
- Organized 2 international astrophysics conferences (~50 participants) and maintained a world-wide network of collaborators
- Wrote research proposals attracting $400k in external funding

Education

UC Berkeley / MS & PhD in Physics
August 2009 - May 2016

Award-winning researcher and teacher

- Wrote influential astrophysics thesis describing outcomes of stellar mergers
- Taught 5 physics and astronomy courses at a range of levels, including co-developing a course for non-majors that fused astronomy and biology
- Advanced diversity and inclusion in physics as part of the Compass Project, engaging undergraduates from groups traditionally underrepresented in the physical sciences through project-based courses and a mentoring program

MIT / BS in Physics
August 2005 - June 2009

Publications

45 refereed publications (16 first-author, 13 second-author); 3514 citations; h-index 22

Selected recent publications

Full publication list is available at https://tinyurl.com/jschwab-papers

[A Helium-flash-induced Mixing Event Can Explain the Lithium Abundances of Red Clump Stars](https://tinyurl.com/jschwab-papers)

J. Schwab

The Astrophysical Journal Letters, 901.1, p. L18 (2020)

[Modules for Experiments in Stellar Astrophysics (MESA): Pulsating Variable Stars, Rotation, Convective Boundaries, and Energy Conservation](https://tinyurl.com/jschwab-papers)

B. Paxton, R. Smolec, **J. Schwab**, A. Gautschy, L. Bildsten, M. Cantiello, A. Dotter, R. Farmer, J. A. Goldberg, A. S. Jermyn, S. M. Kanbur, P. Marchant, A. Thoul, R. H. D. Townsend, W. M. Wolf, M. Zhang and F. X. Timmes

The Astrophysical Journal Supplement, 243.1, p. 10 (2019)

[Modules for Experiments in Stellar Astrophysics (MESA): Convective Boundaries, Element Diffusion, and Massive Star Explosions](https://tinyurl.com/jschwab-papers)

B. Paxton, **J. Schwab**, E. B. Bauer, L. Bildsten, S. Blinnikov, P. Duffell, R. Farmer, J. A. Goldberg, P. Marchant, E. Sorokina, A. Thoul, R. H. D. Townsend and F. X. Timmes

The Astrophysical Journal Supplement, 234, p. 34 (2018)

[The importance of Urca-process cooling in accreting ONe white dwarfs](https://tinyurl.com/jschwab-papers)

J. Schwab, L. Bildsten and E. Quataert

Monthly Notices of the Royal Astronomical Society, 472, pp. 3390–3406 (2017)

[The evolution and fate of super-Chandrasekhar mass white dwarf merger remnants](https://tinyurl.com/jschwab-papers)

J. Schwab, E. Quataert and D. Kasen

Monthly Notices of the Royal Astronomical Society, 463, pp. 3461–3475 (2016)