

Alexander Rudy

alex@alexrudy.org
github.com/alexrudy • www.alexrudy.org

Skills and Qualifications

- Developed extensively in C, C++, Python, JavaScript, and SQL. Experience with PHP, Ruby, Perl, Fortran, R, IDL, Mathematica.
- Knowledge of the following libraries: ZMQ, Numpy, Scipy, Matplotlib, FFTW, SQLAlchemy, REDIS, Flask.
- Knowledge of optical design, low-noise, high sensitivity cameras, and micro electrical mechanical devices.
- Research, development and implementation of advanced systems control theory.

Education

PhD in progress, Astrophysics, University of California Santa Cruz, CA Expected May 2017
Master of Science, Astrophysics, University of California Santa Cruz, CA December 2014
Bachelor of Arts, Cum Laude, Physics, Pomona College, Claremont, CA May 2011

Astrophysics Experience

National Science Foundation Graduate Research Fellow September 2012 - Present

University of California, Santa Cruz, University of California Observatories, and Lawrence Livermore National Laboratory

- Developed operational and real time software for a facility-class operational adaptive optics (AO) instrument at the Lick Observatory.
- Implemented and demonstrated the use of a predictive Kalman filter to correct for temporal errors at 1kHz in the AO system.
- Wrote data analysis software to extract gas dynamics from 3600 correlated spectra in nearby galaxies.

Fulbright Research Fellowship September 2011 - June 2012

Foundation for Scholarly Exchange and National Central University Graduate Institute of Astronomy, Zhongli, Taiwan

- Received a one-year research fellowship to work on Astronomical Instrumentation at National Central University in Taiwan.
- Developed a software end-to-end data simulator for the SEDMachine integral-field spectrograph instrument.

SURF Astronomy Research Assistant May 2010 - September 2010

Caltech Optical Observatories, California Institute of Technology, Pasadena, CA

Software Development for a Robotic Adaptive Optics Telescope Instrument.

- Developed C++ multi-threaded communication software to connect instrument components and controllers.
- Designed a dynamic, configurable status webpage to present instrument users with real-time instrument information.

Adaptive Optics Research Assistant November 2008 - June 2011

Department of Physics and Astronomy, Pomona College, Claremont CA

- Designing and Simulating an Adaptive Optics Instrument for the Pomona College one-meter Telescope at Table Mountain.
- Designing and constructing several laboratory optics testbed configurations of the adaptive optics instrument.

Leadership and Management Experience

Graduate Student-Faculty Liaison June 2014 - Present

University of California, Santa Cruz

Advocate for the interests of graduate students and collaborate with faculty to develop a vision for the department.

Graduate Student Commons Treasurer June 2014 - June 2015

University of California, Santa Cruz

Managed finances for the graduate student owned and operated building at UCSC, including student programs and retail space.

Laboratory Director, Center for Adaptive Optics Summer School June 2014 - August 2014

Center for Adaptive Optics, University of California, Santa Cruz

Managed inquiry-based laboratory activities for professional and academic participants in the Adaptive Optics Summer school.

Editor-in-Chief June 2009 - December 2009

The Student Life Newspaper, Pomona College, Claremont CA

The editor of the weekly student newspaper serving 6,000 members of the Claremont Colleges community, managing a staff of 100.