

Laurel Ruhlen

Graduate Student in Astrophysics, U.C. Santa Cruz

RESEARCH INTERESTS:

- High-energy astrophysics
- Accretion processes in x-ray binaries
- Multiwavelength observation of accreting binaries

CONTACT DETAILS:

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EDUCATION:

2006 S.B., Physics, Massachusetts Institute of Technology
2007- present Ph.D. (in progress), Astrophysics, University of California, Santa Cruz

RESEARCH EXPERIENCE:

Astrophysics

Summer 2003 *MIT Haystack Radio Observatory*
National Science Foundation Research Experience for Undergraduates.
Work on the Low Frequency Array (LOFAR) performance simulator included incorporating the effects of non-linear ionospheric delays into the simulator code, and ranking candidate sites' performance-based suitability.

Jan.-Dec. 2004 *MIT Center for Space Research*
Analyzed Chandra observations of microquasar black hole candidate SS433 and the jets of active galactic nucleus NGC-4945 with Dr. Herman Marshall.

Dec. 2007 - Present *University of California, Santa Cruz*
Current research with Prof. David Smith analyzes x-ray spectra from black hole binaries LMC X-1, LMC X-3, and Cygnus X-1, to pinpoint unique x-ray signatures of wind accretion.
Upcoming work will try to explain observed delays between spectral and luminosity changes in these, and other, x-ray binary systems.

Condensed Matter

Jan. - May 2003

MIT: Ultracold Hydrogen Group

Worked as a lab technician to aid the production of a next-generation apparatus to create and measure properties of Bose-condensed hydrogen gas.

Jan. 2005- Jan. 2006

MIT: Hudson Group

Assembled portions of a scanning tunneling microscope (STM) used for spin-detection in magnetically doped semiconductors. Designed a self-regulating cooling system for a next-generation, cryogen-free STM.

June - Sept. 2007

University of California, Santa Cruz: Carter Group

Measured quantum efficiencies, characteristic degradation times, and the effects of annealing on the electroluminescent properties of ZnS:Cu and ZnS:Cu,Mn.

PREVIOUS POSITIONS:

Spring 2006

Teaching Assistant and Grader for advanced freshman-level electricity and magnetism course in MIT's Experimental Study Group (ESG).

Spring 2004

Gender Issues in Academia Seminar Leader in MIT ESG.

Fall 2004

Grader for single-variable calculus course in MIT ESG.

Jan. 2003 – March 2006

Undergraduate Student Researcher, MIT

Fall 2007

Teaching assistant for calculus-based freshman-level mechanics lab at U.C. Santa Cruz.

Winter 2008

Teaching assistant for non-calculus-based freshman-level mechanics lab at U.C. Santa Cruz.

Jan. 2007 – present

Graduate Student Researcher, U.C. Santa Cruz

AWARDS:

2008 National Science Foundation Graduate Research Fellowship Honorable Mention

PUBLICATIONS:

“Degradation and rejuvenation studies of AC electroluminescent ZnS:Cu,Cl phosphors”, Stanley, J., Jiang, J., Bridges, F., Ruhlen, L., Carter, S., Phys. Rev. B (submitted)