

Sarah Yost
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Assistant Professor, Dept. of Physics, College of St Benedict/St John's University
Aug 2007 - present

Teaching responsibilities (vary by semester):

- **For non-physics majors:**
 - Astronomy: Solar System focus (ASTR 211), Stars and Galaxies focus (ASTR 212)
 - Algebra-based physics: Physics for the Life Sciences I (PHYS 105)
- **For physics majors:**
 - Introductory physics: Electricity and Magnetism (PHYS 200)
 - Modern Physics (PHYS 320)
 - Quantum Mechanics (PHYS 346)
 - Topics in Relativity (PHYS 366)
 - Topics in Astrophysics (cosmology) (PHYS 364)
- Introductory lab supervision

Student Research: directing student summer research and student thesis projects:

Summer 2009 1 student: Feasibility study investigating short-period variable star candidates in the Northern Sky Variability Survey (NSVS) catalogue

2009–10 1 student: "Observations and Analysis of Potentially Variable Stars"

Summer 2010 1 SJU student and 1 student from SouthWest University, China (Summer Research Exchange Program): NSVS short-period candidate studies

2010–11 2 students: thesis work studying NSVS short-period candidates (1 student continuing from previous summer)

Summer 2011 1 SJU student: γ -ray variability versus optical afterglow onset properties in archival γ -ray burst datasets.

Other Research: Gamma-Ray Bursts

Afterglow models and data-fitting in remote collaboration with D. Xu and J.P.U. Fynbo in 2008, and remote collaboration with S.B. Pandey and C. Akerlof in 2009, W. Zheng and C. Akerlof in 2011
Archival data comparisons of optical afterglow properties with prompt γ -ray variability

Service

Department self-study committee, student recruitment interviews, student advising, faculty senate member

Education

PhD, Physics, California Institute of Technology, Pasadena, CA June 2004

Thesis: Broadband Modeling of Gamma-ray Burst Afterglows (advisor: Prof. Fiona Harrison)

B.Sc. Honors, Physics, University of Manitoba, Winnipeg, Canada May 1996

Past Research Experience

Postdoc, University of Michigan Supervisor: Prof. Carl Akerlof Aug 2004 - Aug 2007

• Rapid optical observations of gamma-ray bursts with the ROTSE-III robotic telescope experiment. Member of a team to cooperatively evaluate optical transient candidates flagged by the pipeline, determine real afterglow events, and present these to the community via the GCN Circulars.

• Analysis and interpretation of early afterglow lightcurves detected.

• Supervised graduate and undergraduate students, instructed undergraduate students in data processing and quality check techniques

• Experience disassembling, reassembling and aligning optics during 2005 move of one telescope. E.g., secondary mirror adjustment, polar alignment, restringing coolant circulator tubes.

• Quality checks of the 4 ROTSE telescope systems, troubleshooting identification of pipeline or DAQ shutdown reasons, coordination of solutions with local collaborators as needed.

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- Refinement of data analysis / pipeline tools to improve nightly data quality checks and to aid analysis and evaluation of optical transient candidates.

Postdoc, Caltech

Supervisor: Prof. Fiona Harrison

Oct 2003-May 2004

- Gamma-ray burst afterglow studies (see below). Assisted the SEXSI X-ray survey's optical spectral identifications. Determined redshifts, object types (e.g., broad-line AGN) from spectra

Graduate Research Assistant, Caltech

Gamma-ray burst afterglow studies

Thesis supervisor: Prof. Fiona Harrison

May 1999-Oct 2003

- Implemented a comprehensive fitting code for the fireball model of afterglows. Incorporated known and estimated corrections to the spectrum from radio through X-ray frequencies. Modeled physical parameters of events.

- Estimated certain model assumptions' uncertainties by producing fits for other physical assumptions.
- Performed optical transient followup observations at the Palomar 60" and Palomar 200" telescopes.
- Extracted fluxes from optical data, via photometry, and *Chandra* X-ray data, by spectral fitting.

Search for near-IR emission from dark halos of spiral galaxies

Supervisor: Prof. Andrew Lange

Sept 1996-May 1999

- Assisted with refurbishment, optical alignment, and integration of a LHe-cooled sounding rocket payload.
- Analyzed near-IR image data from the experiment. Set limits on halo light from edge-on spiral galaxies; constrained the type of matter forming the halo.

Past Teaching Experience

Teaching Assistant, Caltech

Mar-Jun 1999

- Graded tests and problem sets, evaluated oral presentations; co-organized field trip to telescope facility; presented review and Q & A sessions

Discussion Section Leader

U. of Michigan (1/3 time appointment)

Sep-Dec 2006

- Led 2 discussion sections for the algebra-based Electricity, Magnetism, Modern Physics (text: Cutnell & Johnson) introductory physics course, 2 hrs of guided problem-solving per week per section. Selected appropriate questions, demonstrated problem-solving techniques.

- Provided tutoring assistance in the Physics Help Room during office hours.
- Familiar with online homework/gradebook and interactive lecture techniques (quizdom) used for the course.

Outreach / Other Experience

Observing night for an alumni family, July 2011

Public observing night in conjunction with Arhuacos Indigenous Group campus visit, Apr 2011

Public talk, Arboretum Natural History Seminar Series, "Extra-Solar Planets", January 2010

Naked-eye observing night for summer Arboretum student workers, Aug 2009

Saturday Morning Physics speaker, Oct 2005: 3 1-hour presentations to a general audience concerning the concepts of special relativity and their application to astrophysics.

Judge for University of Michigan's 2005 Physics Olympiad (thermocouple gauge challenge)

Lab contact for high school tours (University of Michigan, 2004-2006, approx. twice per year)

Colloquium speaker, Gettysburg College, Dec 2005.

Basic literacy one-on-one volunteer tutor for the Washtenaw Literacy organization, Dec 2005 - July 2007

Awards and fellowships

Caltech

Caltech Graduate (Millikan) Fellowship

Oct 1996 - Jun 1997

University of Manitoba:

University Gold medal, Allen Medal, Governor-General's Silver Medal

1996

Professional Memberships: American Astronomical Society

Language Skills

Computer: C, IDL, Perl, Mathematica

Regular: English, French