Philip S. Cowperthwaite

Contact Information	Philip S. Cowperthwaite Department of Astronomy Harvard University Cambridge, MA 02138	*Office:* +1-617-495-4141 *Mobile:* +1-301-788-3369 *E-mail:* pcowpert@cfa.harvard.edu *URL:* www.pscastro.com

Citizenship USA

Research Interests Electromagnetic counterparts to gravitational wave events. Contamination in optical transient surveys. Optical survey design and optimization.

Education

Harvard University, Cambridge, Massachusetts USA
A.M., Astronomy, Spring 2015
Ph.D., Astronomy, Expected Spring 2018
- Thesis Advisor: Edo Berger

The University of Maryland at College Park, College Park, Maryland USA
B.S., Summa Cum Laude, Astronomy with High Honors, Spring 2013
B.S., Summa Cum Laude, Physics, Spring 2013
- Minor in Mathematics

Awards

American Astronomical Society
- Rodger Doxsey Travel Prize, 2018

Harvard University
- Harvard Horizons Finalist, 2018
- Merit Fellowship, 2017–2018
- John Parker Bequest Grant, 2017–2018
- John P. and Carol J. Merrill Graduate Fellow, 2014–15

National Science Foundation
- Graduate Research Fellowship, 2013–18
- Research Experience for Undergraduates Summer Fellowship, 2012

University of Maryland, College Park
- University Medal Finalist, 2013
- J.R. Dorfman Prize for Outstanding Undergraduate Research, 2013

Center for Research and Exploration in Space Science and Technology
- Summer Research Fellowship, 2011

The State of Maryland
- Howard P. Rawlings Grant, 2010–2012
- Maryland Delegates Grant, 2010–12

Professional Experience

ComSciCon – Local Organizing Committee 2017
Astrophysical Journal Letters – Referee
American Physical Society – Member
American Astronomical Society – Junior Member

Research Experience

NSF Graduate Research Fellow, Harvard University
Optical Follow-Up of Gravitational Wave Events **Fall 2013 to Present**
- Advisor: Prof. Edo Berger

REU Summer Research Internship, Smithsonian Astrophysical Observatory
Infrared Spectroscopy of Blazars **Summer 2012**
- Advisors: Drs. Howard A. Smith and Raffaele D'Abrusco

Undergraduate Research Assistant, The University of Maryland, College Park

Numerical Simulations of Accretion Flows **Fall 2012 to Summer 2013**

- Advisor: Prof. Christopher S. Reynolds
- Senior Thesis, Awarded High Honors

X-Ray Spectroscopy of Active Galactic Nuclei **Fall 2010 to Spring 2012**

- Advisor: Prof. Christopher S. Reynolds
- Joint Space Science Institute Undergraduate Research Scholar

Visualizations of Black Hole Accretion Flows **Spring 2010 to Fall 2010**

- Advisor: Prof. Christopher S. Reynolds

CRESST Summer Research Internship, NASA/Goddard Space Flight Center

Visualizations of Merging Black Hole Binaries **Summer 2011**

- Advisors: Drs. John Baker and Bruno Giacomazzo

Mentoring Experience

Harvard University, Cambridge, Massachusetts USA

Research Advisor for Undergraduates

- Mahlet Shiferaw – Galaxy Catalogs for GW/EM Follow-Up – Summer 2017
- Samuel Liu – Data Science Techniques for Light Curve Analysis – Summer 2016

Teaching Experience

Harvard University, Cambridge, Massachusetts USA

Graduate Teaching Fellow

- Astronomy 16 – Stellar and Planetary Astronomy – Spring 2016
- Astronomy 200 – Radiative Processes – Spring 2014
  - Certificate of Teaching Excellence – Bok Center for Teaching

University of Maryland College Park, College Park, Maryland USA

Undergraduate Teaching Assistant

- Astronomy 100 – Introduction to Astronomy – Fall 2011 to Spring 2013
- Astronomy 120 – Introductory Astrophysics – Fall 2012 (Grader)

Observational Experience

Blanco Telescope, Cerro Tololo Inter-American Observatory, Chile

- DECam – DES-GW LIGO Follow-up – 125 hours total

Magellan Telescope, Las Campanas Observatory, Chile

- Clay 6.5m – LDSS3-C – 3 nights
- Baade 6.5m – IMACS – 8 nights

MMT, Fred Lawrence Whipple Observatory, USA

- BlueChannel – 3 nights

Technical Skills

Programming: Python, R, C/C++, Perl, Mathematica, MATLAB, Git **Science Applications:** SAO DS9, HEASoft, *Spitzer* SMART software, IDL Astrolib Tools, VISIT, Gnuplot, IRAF

Published Works

As of December 15, 2017 I am an author on 27 refereed publications (7 as first author), my h-index is 18 and my refereed publications have 768 citations. First author papers are shown here. A full publication list is available below.

Cowperthwaite, P. S., Berger, E., Villar, V. A., & et al., "The Electromagnetic Counterpart of the Binary Neutron Star Merger LIGO/VIRGO GW170817. II. UV, Optical, and Near-IR Light Curves and Comparison to Kilonova Models" 2017, ApJL, 848, L17

Cowperthwaite, P. S., Berger, E., Rest, A., & et al., "The LIGO "Dry-Run": An Empirical Study of Contamination in Wide-Field Optical Follow-Up of Gravitational Wave Events" 2017, ApJ, *Submitted*

Cowperthwaite, P. S., Berger, E., Soares-Santos, M., & et al., "A DECam Search for an Optical Counterpart to the LIGO Gravitational-wave Event GW151226" 2016, ApJL, 826, L29

Cowperthwaite, P. S., & Berger, E., "A Comprehensive Study of Detectability and Contamination in Deep Rapid Optical Searches for Gravitational Wave Counterparts" 2015, ApJ, 814, 25

Cowperthwaite, P. S., & Reynolds, C. S. "Nonlinear Dynamics of Accretion Disks with Stochastic Viscosity," 2014, ApJ, 791, 126

Cowperthwaite, P. S., Massaro, F., D'Abrusco, R., & et al., "Identification of New Blazar Candidates With Multifrequency Archival Observations," 2013, AJ, 146, 110

Cowperthwaite, P. S. & Reynolds, C. S., "The Central Engine Structure of 3C120: Evidence for a Retrograde Black Hole or a Refilling Accretion Disk," 2012, ApJ, 752, L21

Conferences and Presentations

As of December 15, 2017 I have given 21 presentations of which 18 have been talks and 3 have been posters.

References

Prof. Edo Berger (e-mail: eberger@cfa.harvard.edu; phone: +617-495-7914)
- Professor, Astronomy, Harvard University

Prof. Brian Metzger (e-mail: bdm2129@columbia.edu; phone: +212-854-9702)
- Assistant Professor, Department of Physics, Columbia University

Prof. Daniel E. Holz (e-mail: dholz@uchicago.edu; phone: +773-834-3306)
- Associate Professor, KICP, The University of Chicago

Prof. Daniel Eisenstein (e-mail: deisenstein@cfa.harvard.edu; phone: +617-495-7530)
- Professor, Astronomy, Harvard University