Philip S. Cowperthwaite

CONTACT INFORMATION

Philip S. Cowperthwaite
Department of Astronomy
Harvard University
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CITIZENSHIP

USA

RESEARCH INTERESTS

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

EDUCATION

Harvard University, Cambridge, Massachusettes USA

M.S., Astronomy, Spring 2015

Ph.D., Astronomy, Expected Spring 2018

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

Harvard University
- 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 (Funded: 2013–2016)
- 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, 2010–12
- 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 Graviational 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, Massachusettes 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, Massachusettes USA

Graduate Teaching Fellow

- Astronomy 16 – Stellar and Planetary Astronomy – Spring 2016
- Astronomy 200 – Radiative Processes – Spring 2014

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 2017B Semester – 20 hours
- DECam – DES-GW LIGO Follow-up 2017A Semester – 25 hours
- DECam – DES-GW LIGO Follow-up 2016B Semester – 50 hours
- DECam – DES-GW LIGO Follow-up 2015B Semester – 30 hours

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

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

Lunnan, R.; Chornock, R.; Berger, E.; Milisavljevic, D.; Jones, D. O.; Rest, A.; Fong, W.; Fransson, C.; Margutti, R.; Drout, M. R.; Blanchard, P. K.; Challis, P.; Cowperthwaite, P. S.; & et al., "PS1-14bj: A Hydrogen-poor Superluminous Supernova With a Long Rise and Slow Decay" 2016, ApJ, 831, 144

Nicholl, M.; Berger, E.; Margutti, R.; Chornock, R.; Blanchard, P. K.; Jerkstrand, A.; Smartt, S. J.; Arcavi, I.; Challis, P.; Chambers, K. C.; Chen, T. -W.; Cowperthwaite, P. S.; & et al., "Superluminous Supernova SN 2015bn in the Nebular Phase: Evidence for the Engine-powered Explosion of a Stripped Massive Star" 2016, ApJ, 828, 18

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

Abbott, B. P., Abbot, R., Abbott, T.D., & et al., "Supplement: Localization and Broadband Follow-up of the Gravitational-wave Transient GW150914" 2016, ApJS , 225, 8 (Author List Alphabetical, Truncated)

Abbott, B. P., Abbot, R., Abbott, T.D., & et al., "Localization and Broadband Follow-up of the Gravitational-wave Transient GW150914" 2016, ApJL , 826L, 13A (Author List Alphabetical, Truncated)

Nicholl, M., Berger, E., Smartt, S. J., Margutti, R., Kamble, A., Alexander, K. D., Chen, T. -W., Inserra, C., Arcavi, I., Blanchard, P. K., Cartier, R., Chambers, K. C., Childress, M. J., Chornock, R., Cowperthwaite, P. S., & et al., "SN 2015BN: A Detailed Multi-wavelength View of a Nearby Superluminous Supernova" 2016, ApJ, 826, 39

Annis, J., Soares-Santos, M., Berger, E., Brout, D., Chen, H., Chornock, R., Cowperthwaite, P. S., & et al., "A Dark Energy Camera Search for Missing Supergiants in the LMC after the Advanced LIGO Gravitational-wave Event GW150914" 2016, ApJL, 823, L34

Soares-Santos, M., Kessler, R., Berger, E., Annis, J., Brout, D., Buckley-Geer, E., Chen, H., Cowperthwaite, P. S., & et al., "A Dark Energy Camera Search for an Optical Counterpart to the First Advanced LIGO Gravitational Wave Event GW150914" 2016, ApJL, 823, L33

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

Massaro, F., Giroletti, M., D'Abrusco, R., Masetti, N., Paggi, A., Cowperthwaite, P. S., & et al., "The Low-frequency Radio Catalog of Flat-spectrum Sources," 2014, ApJS, 213, 3

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

October 2017, "Astrophysics Seminar, Fermilab" Batavia, IL
- Talk Given: "Deep and Rapid Optical Follow-Up of GW Triggers with DECam"

September 2017, ''Theory Lunch, Northwestern University" Evanston, IL
- Talk Given: "Deep and Rapid Optical Follow-Up of GW Triggers with DECam"

August 2017, "CTC Theory Lunch, UMD Department of Astronomy" College Park, MD
- Talk Given: "Deep and Rapid Optical Follow-Up of GW Triggers with DECam"

August 2017, "Electromagnetic Signatures of r-process Nucleosynthesis in Neutron Star Binary Mergers" Seattle, WA
- Talk Given: "Overview: EM Observations of Kilonovae"
- Talk Given: "Deep and Rapid Optical Follow-Up of GW Triggers with DECam"

June 2017, "Generation-GW: Diving into Gravitational Waves" St. Thomas, USVI
- Talk Given: "Deep and Rapid Optical Follow-Up of GW Triggers with DECam"

November 2016, "Time-Domain Astrophysics: Incorporating Observations, Theory, and Computation in the American Northeast" Cambridge, MA
- Talk Given: "The State of Optical follow-up of GW Events"

June 2016, "Gravitational Wave and Astronomy Workshop 2016" Cape Cod, MA
- Talk Given: "DECam Searches for Optical Counterparts to Gravitational Wave Events"

April 2016, "APS April Meeting 2016" Salt Lake City, Utah
- Talk Given: "Identifying Electromagnetic Counterparts to Gravitational Wave Triggers With DECam."

June 2015, "Gravitational Wave and Astronomy Workshop 2015" Osaka, Japan
- Award Talk Given: "A Comprehensive Study of Detectability and Contamination in Deep Rapid Optical Searches for Gravitational Wave Counterparts"
- Poster Presented:"A Comprehensive Study of Detectability and Contamination in Deep Rapid Optical Searches for Gravitational Wave Counterparts"
- Poster Award: 2nd place

January 2013, "221st AAS Meeting" Long Beach, CA
- Poster Presented: "Piercing the Continuum of *WISE* selected blazars"

August 2012, "Summer REU Colloquium Series", Smithsonian Astrophysical Observatory, Cambridge, MA.
- Talk given: "The *Spitzer* view of *WISE* selected blazars"

June 2012, "Energetic Astronomy" Annapolis, MD
- Poster Presented: "The Central Engine Structure of 3C120: Evidence for a Retrograde Black Hole or a Refilling Accretion Disk"

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