

## Philip S. Cowperthwaite

---

CONTACT INFORMATION	<p>Philip S. Cowperthwaite Carnegie Observatories 813 Santa Barbara St. Pasadena, CA 91101</p> <p><i>Office:</i> +1-626-304-0265 <i>Mobile:</i> +1-301-788-3369 <i>URL:</i> <a href="http://www.pscastro.com">www.pscastro.com</a> <i>E-mail:</i> <a href="mailto:pcowperthwaite@carnegiescience.edu">pcowperthwaite@carnegiescience.edu</a></p>
CITIZENSHIP	USA
RESEARCH INTERESTS	Electromagnetic counterparts to gravitational wave events. Theoretical modeling of optical transients associated with neutron star mergers (e.g., kilonovae). Joint GW-EM data as a probe of neutron star physics. Physics of rapidly evolving optical transients.
EDUCATION	<p><b>Harvard University</b>, Cambridge, Massachusetts USA A.M., Astronomy, Spring 2015 Ph.D., Astronomy, Spring 2018</p> <ul style="list-style-type: none"><li>• From Design to Detection: Joint Gravitational Wave and Electromagnetic Astronomy</li><li>• Advisor: Prof. Edo Berger</li></ul> <p><b>The University of Maryland at College Park</b>, College Park, Maryland USA B.S., Summa Cum Laude, Astronomy with High Honors, Spring 2013 B.S., Summa Cum Laude, Physics, Spring 2013</p> <ul style="list-style-type: none"><li>• Minor in Mathematics</li></ul>
POSITIONS	<p><b>Carnegie Observatories</b>, Pasadena, California USA NASA Hubble Postdoctoral Fellow, 2018-2021</p>
AWARDS	<p><b>National Aeronautics and Space Administration</b></p> <ul style="list-style-type: none"><li>• Hubble Postdoctoral Fellow, 2018-2021</li></ul> <p><b>American Astronomical Society</b></p> <ul style="list-style-type: none"><li>• Rodger Doxsey Travel Prize, 2018</li></ul> <p><b>Harvard University</b></p> <ul style="list-style-type: none"><li>• Fireman Thesis Prize, 2018</li><li>• Harvard Horizons Finalist, 2018</li><li>• Merit Fellowship, 2017–2018</li><li>• John Parker Bequest Grant, 2017–2018</li><li>• John P. and Carol J. Merrill Graduate Fellow, 2014–15</li></ul> <p><b>National Science Foundation</b></p> <ul style="list-style-type: none"><li>• Graduate Research Fellowship, 2013–18</li><li>• Research Experience for Undergraduates Summer Fellowship, 2012</li></ul> <p><b>University of Maryland, College Park</b></p> <ul style="list-style-type: none"><li>• University Medal Finalist, 2013</li><li>• J.R. Dorfman Prize for Outstanding Undergraduate Research, 2013</li></ul> <p><b>Center for Research and Exploration in Space Science and Technology</b></p> <ul style="list-style-type: none"><li>• Summer Research Fellowship, 2011</li></ul> <p><b>The State of Maryland</b></p> <ul style="list-style-type: none"><li>• Howard P. Rawlings Grant, 2010–2012</li><li>• Maryland Delegates Grant, 2010–12</li></ul>

PROFESSIONAL SERVICE	<p><b>US ELT Program – Transients and Multi-Messenger Astronomy Group</b></p> <p><b>LSST - Transients and Variable Stars Group</b></p> <p><b>ComSciCon – Local Organizing Committee 2017</b></p> <p><b>ApJL, Nature Astronomy, MNRAS, PRL, PASJ – Referee</b></p> <p><b>American Physical Society – Member</b></p> <p><b>American Astronomical Society – Member</b></p>
PREVIOUS RESEARCH EXPERIENCE	<p><b>NSF Graduate Research Fellow</b>, Harvard University  <i>Optical Follow-Up of Gravitational Wave Events</i> <b>Fall 2013 to Spring 2018</b></p> <ul style="list-style-type: none"> <li>• Advisor: Prof. Edo Berger</li> </ul> <p><b>REU Summer Research Internship</b>, Smithsonian Astrophysical Observatory  <i>Infrared Spectroscopy of Blazars</i> <b>Summer 2012</b></p> <ul style="list-style-type: none"> <li>• Advisors: Drs. Howard A. Smith and Raffaele D’Abrusco</li> </ul> <p><b>Undergraduate Research Assistant</b>, The University of Maryland, College Park  <i>Numerical Simulations of Accretion Flows*</i> <b>Fall 2012 to Summer 2013</b>  <i>X-Ray Spectroscopy of Active Galactic Nuclei<sup>†</sup></i> <b>Fall 2010 to Spring 2012</b>  <i>Visualizations of Black Hole Accretion Flows</i> <b>Spring 2010 to Fall 2010</b></p> <ul style="list-style-type: none"> <li>• Advisor: Prof. Christopher S. Reynolds</li> </ul> <p>*Senior Thesis, Awarded High Honors  <sup>†</sup>Joint Space Science Institute Undergraduate Research Scholar</p> <p><b>CRESST Summer Research Internship</b>, NASA/Goddard Space Flight Center  <i>Visualizations of Merging Black Hole Binaries</i> <b>Summer 2011</b></p> <ul style="list-style-type: none"> <li>• Advisors: Drs. John Baker and Bruno Giacomazzo</li> </ul>
MENTORING EXPERIENCE	<p><b>Research Advisor for Undergraduates</b>, Harvard University</p> <ul style="list-style-type: none"> <li>• Mahlet Shiferaw – Galaxy Catalogs for GW/EM Follow-Up – Summer 2017</li> <li>• Samuel Liu – Data Science Techniques for Light Curve Analysis – Summer 2016</li> </ul>
TEACHING EXPERIENCE	<p><b>Graduate Teaching Fellow</b>, Harvard University</p> <ul style="list-style-type: none"> <li>• Astronomy 16 – Stellar and Planetary Astronomy – Spring 2016</li> <li>• Astronomy 200 – Radiative Processes – Fall 2014</li> <li>• Certificate of Teaching Excellence – Bok Center for Teaching</li> </ul> <p><b>Undergraduate Teaching Assistant</b>, University of Maryland College Park</p> <ul style="list-style-type: none"> <li>• Astronomy 100 – Introduction to Astronomy – Fall 2011 to Spring 2013</li> <li>• Astronomy 120 – Introductory Astrophysics – Fall 2012 (Grader)</li> </ul>
OBSERVING PROPOSALS	<p>I am a PI or Co-I on long-running programs designed to search for and characterize electromagnetic counterparts to gravitational wave events across a large fraction of the electromagnetic spectrum. Instruments for which I have reduced and analyzed public data, but not proposed for time, are indicated with an asterisk.</p> <p>Radio: VLA, ATCA, ALMA  Infrared: Magellan/FIRE, MMT/MMIRS, Spitzer/IRAC*  Optical: Blanco/DECam, Magellan/IMACS and LDSS3-C, MMT/MMTCam*  X-Ray: Chandra, NuSTAR, XMM-Newton</p>
TECHNICAL SKILLS	<p><b>Programming:</b> Python, R, C/C++/C#, Perl, Rust, Mathematica, MATLAB, Git</p> <p><b>Science Applications:</b> DS9, HEASoft, <i>Spitzer</i> SMART software, CIAO, IDL, IRAF</p>
PUBLICATIONS	<p>As of October 29, 2019 I am an author on 51 publications (9 as first author), my <i>h</i>-index is 26 and my publications have 3897 citations. Noteworthy papers are shown here. A full publication list is included.</p>

Gomez, S., Hosseinzadeh, G., Cowperthwaite, P. S., & et al. “A Galaxy-Targeted Search for the Optical Counterpart of the Candidate NS-BH Merger S190814bv with Magellan” 2019, arXiv:1908.08913

Hosseinzadeh, G., Cowperthwaite, P. S., Gomez, S., & et al. “Follow-up of the Neutron Star Bearing Gravitational-wave Candidate Events S190425z and S190426c with MMT and SOAR” 2019, ApJL, 880, L4

Cowperthwaite, P. S., Villar, V. A., Scolnic D. M., & Berger E., “LSST Target-of-Opportunity Observations of Gravitational Wave Events: Essential and Efficient” 2018, ApJ, 874, 88

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” 2018, ApJ, 858, 18

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., 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

PRESENTATIONS As of October 29, 2019 I have given 32 presentations of which 29 have been talks and 3 have been posters.

REFERENCES

**Prof. Edo Berger** (eberger@cfa.harvard.edu; +617-495-7914)

- Professor, Astronomy, Harvard University

**Prof. Brian Metzger** (bdm2129@columbia.edu; +212-854-9702)

- Associate Professor, Department of Physics, Columbia University

**Prof. Raffaella Margutti** (raffaella.margutti@northwestern.edu; +847-491-8637)

- Assistant Professor, Department of Physics & Astronomy, Northwestern University

**Dr. Tony Piro** (piro@carnegiescience.edu; +626-304-0297)

- Staff Astronomer, Carnegie Observatories