

Philip S. Cowperthwaite

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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, Massachusetts 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 <ul style="list-style-type: none">• Minor in Mathematics	
AWARDS	Harvard University <ul style="list-style-type: none">• Merit Fellowship 2017–2018• John Parker Bequest Grant 2017–2018• John P. and Carol J. Merrill Graduate Fellow, 2014–15 National Science Foundation <ul style="list-style-type: none">• Graduate Research Fellowship, 2013–18 (Funded: 2013–2016)• Research Experience for Undergraduates Summer Fellowship, 2012 University of Maryland, College Park <ul style="list-style-type: none">• University Medal Finalist, 2013• J.R. Dorfman Prize for Outstanding Undergraduate Research, 2013 Center for Research and Exploration in Space Science and Technology <ul style="list-style-type: none">• Summer Research Fellowship, 2011 The State of Maryland <ul style="list-style-type: none">• 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 <i>Optical Follow-Up of Gravitational Wave Events</i> <ul style="list-style-type: none">• Advisor: Prof. Edo Berger	Fall 2013 to Present

	<p>REU Summer Research Internship, Smithsonian Astrophysical Observatory</p> <p><i>Infrared Spectroscopy of Blazars</i> Summer 2012</p> <ul style="list-style-type: none"> • Advisors: Drs. Howard A. Smith and Raffaele D’Abrusco
	<p>Undergraduate Research Assistant, The University of Maryland, College Park</p> <p><i>Numerical Simulations of Accretion Flows</i> Fall 2012 to Summer 2013</p> <ul style="list-style-type: none"> • Advisor: Prof. Christopher S. Reynolds • Senior Thesis, Awarded High Honors <p><i>X-Ray Spectroscopy of Active Galactic Nuclei</i> Fall 2010 to Spring 2012</p> <ul style="list-style-type: none"> • Advisor: Prof. Christopher S. Reynolds • Joint Space Science Institute Undergraduate Research Scholar <p><i>Visualizations of Black Hole Accretion Flows</i> Spring 2010 to Fall 2010</p> <ul style="list-style-type: none"> • Advisor: Prof. Christopher S. Reynolds
	<p>CRESST Summer Research Internship, NASA/Goddard Space Flight Center</p> <p><i>Visualizations of Merging Black Hole Binaries</i> Summer 2011</p> <ul style="list-style-type: none"> • Advisors: Drs. John Baker and Bruno Giacomazzo
MENTORING EXPERIENCE	<p>Harvard University, Cambridge, Massachusetts USA</p> <p><i>Research Advisor for Undergraduates</i></p> <ul style="list-style-type: none"> • Mahlet Shiferaw – Galaxy Catalogs for GW/EM Follow-Up – Summer 2017 • Samuel Liu – Data Science Techniques for Light Curve Analysis – Summer 2016
TEACHING EXPERIENCE	<p>Harvard University, Cambridge, Massachusetts USA</p> <p><i>Graduate Teaching Fellow</i></p> <ul style="list-style-type: none"> • Astronomy 16 – Stellar and Planetary Astronomy – Spring 2016 • Astronomy 200 – Radiative Processes – Spring 2014 <ul style="list-style-type: none"> • Certificate of Teaching Excellence – Bok Center for Teaching <p>University of Maryland College Park, College Park, Maryland USA</p> <p><i>Undergraduate Teaching Assistant</i></p> <ul style="list-style-type: none"> • Astronomy 100 – Introduction to Astronomy – Fall 2011 to Spring 2013 • Astronomy 120 – Introductory Astrophysics – Fall 2012 (Grader)
OBSERVATIONAL EXPERIENCE	<p>Blanco Telescope, Cerro Tololo Inter-American Observatory, Chile</p> <ul style="list-style-type: none"> • 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 <p>Magellan Telescope, Las Campanas Observatory, Chile</p> <ul style="list-style-type: none"> • Clay 6.5m – LDSS3-C – 3 nights • Baade 6.5m – IMACS – 8 nights <p>MMT, Fred Lawrence Whipple Observatory, USA</p> <ul style="list-style-type: none"> • BlueChannel – 3 nights

TECHNICAL SKILLS	<p>Programming: Python, R, C/C++, Perl, Mathematica, MATLAB, Git</p> <p>Science Applications: SAO DS9, HEASoft, <i>Spitzer</i> SMART software, IDL Astrolib Tools, VISIT, Gnuplot, IRAF</p>
PUBLISHED WORKS	<p>As of October 30, 2017 I am an author on 26 refereed publications (7 as first author), my <i>h</i>-index is 11 and my refereed publications have 423 citations. First author papers are shown here. A full publication list is available below.</p> <p>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</p> <p>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, <i>Submitted</i></p> <p>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</p> <p>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</p> <p>Cowperthwaite, P. S., & Reynolds, C. S. “Nonlinear Dynamics of Accretion Disks with Stochastic Viscosity,” 2014, ApJ, 791, 126</p> <p>Cowperthwaite, P. S., Massaro, F., D’Abrusco, R., & et al., “Identification of New Blazar Candidates With Multifrequency Archival Observations,” 2013, AJ, 146, 110</p> <p>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</p>
CONFERENCES AND PRESENTATIONS	<p>As of October 30, 2017 I have given 17 presentations of which 14 have been talks and 3 have been posters. A complete listing of talks and posters is available below.</p>
REFERENCES	<p>Prof. Edo Berger (e-mail: eberger@cfa.harvard.edu; phone: +617-495-7914)</p> <ul style="list-style-type: none"> • Professor, Astronomy, Harvard University <p>Prof. Brian Metzger (e-mail: bdm2129@columbia.edu; phone: +212-854-9702)</p> <ul style="list-style-type: none"> • Assistant Professor, Department of Physics, Columbia University <p>Prof. Daniel E. Holz (e-mail: dholz@uchicago.edu; phone: +773-834-3306)</p> <ul style="list-style-type: none"> • Associate Professor, KICP, The University of Chicago <p>Prof. Daniel Eisenstein (e-mail: deisenstein@cfa.harvard.edu; phone: +617-495-7530)</p> <ul style="list-style-type: none"> • Professor, Astronomy, Harvard University

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Publications

Updated Oct 30, 2017. The most recent version of this list may be found online at <http://www.pscastro.com>. ADS citation counts are shown in square brackets. I am an author on 26 refereed publications (7 as first author), my *h*-index is 11 and my refereed publications have 423 citations.

Refereed

26. C Guidorzi, R Margutti, D Brout, D Scolnic, W Fong, KD Alexander, **PS Cowperthwaite**, E Berger, PK Blanchard, R Chornock, DL Coppejans, T Eftekhari, JA Frieman, D Huterer, M Nicholl, M Soares-Santos, VA Villar, PKG Williams. “*Improved Constraints on H_0 from a combined analysis of gravitational-wave and electromagnetic emission from GW170817.*” 2017, [arxiv:1710.06426](#).
25. D Scolnic, R Kessler, D Brout, **PS Cowperthwaite**, M Soares-Santos, J Annis, K Herner, H-Y Chen, M Sako, Z Doctor, RE Butler, A Palmese, HT Diehl, J Frieman, DE Holz, E Berger, R Chornock, VA Villar, M Nicholl, R Biswas, R Hounsell, RJ Foley, J Metzger, A Rest, J García-Bellido, A Möller, P Nugent, TMC Abbott, FB Abdalla, S Allam, K Bechtol, A Benoit-Lévy, E Bertin, D Brooks, E Buckley-Geer, A Carnero Rosell, M Carrasco Kind, J Carretero, FJ Castander, CE Cunha, CB D’Andrea, LN da Costa, C Davis, P Doel, A Drlica-Wagner, TF Eifler, B Flaugher, P Fosalba, E Gaztanaga, DW Gerdes, D Gruen, RA Gruendl, J Gschwend, G Gutierrez, WG Hartley, K Honscheid, DJ James, MWG Johnson, MD Johnson, E Krause, K Kuehn, S Kuhlmann, O Lahav, TS Li, M Lima, MAG Maia, M March, JL Marshall, F Menanteau, R Miquel, E Neilsen, AA Plazas, E Sanchez, V Scarpine, M Schubnell, I Sevilla-Noarbe, M Smith, RC Smith, F Sobreira, E Suchyta, MEC Swanson, G Tarle, RC Thomas, DL Tucker, AR Walker, DES Collaboration. “*How Many Kilonovae Can Be Found in Past, Present, and Future Survey Datasets?.*” 2017, [arxiv:1710.05845](#) [1].
24. W Fong, E Berger, PK Blanchard, R Margutti, **PS Cowperthwaite**, R Chornock, KD Alexander, BD Metzger, VA Villar, M Nicholl, T Eftekhari, PKG Williams, J Annis, D Brout, DA Brown, H-Y Chen, Z Doctor, HT Diehl, DE Holz, A Rest, M Sako, M Soares-Santos. “*The Electromagnetic Counterpart of the Binary Neutron Star Merger LIGO/VIRGO GW170817. VIII. A Comparison to Cosmological Short-duration Gamma-ray Bursts.*” 2017, [The Astrophysical Journal Letters](#) 848 L23.
23. PK Blanchard, E Berger, W Fong, M Nicholl, J Leja, C Conroy, KD Alexander, R Margutti, PKG Williams, Z Doctor, R Chornock, VA Villar, **PS Cowperthwaite**, J Annis, D Brout, DA Brown, H-Y Chen, T Eftekhari, JA Frieman, DE Holz, BD Metzger, A Rest, M Sako, M Soares-Santos. “*The Electromagnetic Counterpart of the Binary Neutron Star Merger LIGO/VIRGO GW170817. VII. Properties of the Host Galaxy and Constraints on the Merger Timescale.*” 2017, [The Astrophysical Journal Letters](#) 848 L22.
22. KD Alexander, E Berger, W Fong, PKG Williams, C Guidorzi, R Margutti, BD Metzger, J Annis, PK Blanchard, D Brout, DA Brown, H-Y Chen, R Chornock, **PS Cowperthwaite**, M Drout, T Eftekhari, J Frieman, DE Holz, M Nicholl, A Rest, M Sako, M Soares-Santos, VA Villar. “*The Electromagnetic Counterpart of the Binary Neutron Star Merger LIGO/VIRGO GW170817. VI. Radio Constraints on a Relativistic Jet and Predictions for Late-Time Emission from the Kilonova Ejecta.*” 2017, [The Astrophysical Journal Letters](#) 848 L21.
21. R Margutti, E Berger, W Fong, C Guidorzi, KD Alexander, BD Metzger, PK Blanchard, **PS Cowperthwaite**, R Chornock, T Eftekhari, M Nicholl, VA Villar, PKG Williams, J Annis, DA Brown, HY Chen, Z Doctor, JA Frieman, DE Holz, M Sako, M Soares-Santos. “*The Electromagnetic Counterpart of the Binary Neutron Star Merger LIGO/VIRGO GW170817. V. Rising X-ray Emission from an Off-Axis Jet.*” 2017, [The Astrophysical Journal Letters](#) 848 L20.
20. R Chornock, E Berger, D Kasen, **PS Cowperthwaite**, M Nicholl, VA Villar, KD Alexander, PK Blanchard, T Eftekhari, W Fong, R Margutti, PKG Williams, J Annis, D Brout, DA Brown, H-Y Chen, MR

Drout, RJ Foley, JA Frieman, CL Fryer, DE Holz, T Matheson, BD Metzger, E Quataert, A Rest, M Sako, DM Scolnic, N Smith, M Soares-Santos. “*The Electromagnetic Counterpart of the Binary Neutron Star Merger LIGO/VIRGO GW170817. IV. Detection of Near-infrared Signatures of r-process Nucleosynthesis with Gemini-South.*” 2017, [The Astrophysical Journal Letters](#) 848 L19.

19. M Nicholl, E Berger, D Kasen, BD Metzger, J Elias, C Briceno, KD Alexander, PK Blanchard, R Chornock, **PS Cowperthwaite**, T Eftekhari, W Fong, R Margutti, VA Villar, PKG Williams, W Brown, J Annis, A Bahramian, D Brout, DA Brown, H-Y Chen, JC Clemens, E Denny, B Dunlap, DE Holz, E Marchesini, F Massaro, N Moskowitz, I Pelisoli, A Rest, F Ricci, M Sako, M Soares-Santos, J Strader. “*The Electromagnetic Counterpart of the Binary Neutron Star Merger LIGO/VIRGO GW170817. III. Optical and UV Spectra of a Blue Kilonova From Fast Polar Ejecta.*” 2017, [The Astrophysical Journal Letters](#) 848 L18.
18. **PS Cowperthwaite**, E Berger, VA Villar, BD Metzger, M Nicholl, R Chornock, PK Blanchard, W Fong, R Margutti, M Soares-Santos, KD Alexander, S Allam, J Annis, D Brout, DA Brown, RE Butler, H-Y Chen, HT Diehl, Z Doctor, MR Drout, T Eftekhari, B Farr, DA Finley, RJ Foley, JA Frieman, CL Fryer, J García-Bellido, MSS Gill, J Guillochon, K Herner, DE Holz, D Kasen, R Kessler, J Marriner, T Matheson, JEH Neilsen, E Quataert, A Palmese, A Rest, M Sako, DM Scolnic, N Smith, DL Tucker, PKG Williams, E Balbinot, JL Carlin, ER Cook, F Durret, TS Li, PAA Lopes, ACC Lourenço, JL Marshall, GE Medina, J Muir, RR Muñoz, M Sauseda, DJ Schlegel, LF Secco, AK Vivas, W Wester, A Zenteno, Y Zhang, TMC Abbott, M Banerji, K Bechtol, A Benoit-Lévy, E Bertin, E Buckley-Geer, DL Burke, D Capozzi, A Carnero Rosell, M Carrasco Kind, FJ Castander, M Croce, CE Cunha, CB D’Andrea, LN da Costa, C Davis, DL DePoy, S Desai, JP Dietrich, A Drlica-Wagner, TF Eifler, AE Evrard, E Fernandez, B Flaugher, P Fosalba, E Gaztanaga, DW Gerdes, T Giannantonio, DA Goldstein, D Gruen, RA Gruendl, G Gutierrez, K Honscheid, B Jain, DJ James, T Jeltema, MWG Johnson, MD Johnson, S Kent, E Krause, R Kron, K Kuehn, N Kuropatkin, O Lahav, M Lima, H Lin, MAG Maia, M March, P Martini, RG McMahon, F Menanteau, CJ Miller, R Miquel, JJ Mohr, E Neilsen, RC Nichol, RLC Ogando, AA Plazas, N Roe, AK Romer, A Roodman, ES Rykoff, E Sanchez, V Scarpine, R Schindler, M Schubnell, I Sevilla-Noarbe, M Smith, RC Smith, F Sobreira, E Suchyta, MEC Swanson, G Tarle, D Thomas, RC Thomas, MA Troxel, V Vikram, AR Walker, RH Wechsler, J Weller, B Yanny, J Zuntz. “*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, [The Astrophysical Journal Letters](#) 848 L17.
17. M Soares-Santos, DE Holz, J Annis, R Chornock, K Herner, E Berger, D Brout, H Chen, R Kessler, M Sako, S Allam, DL Tucker, RE Butler, A Palmese, Z Doctor, HT Diehl, J Frieman, B Yanny, H Lin, D Scolnic, **P Cowperthwaite**, E Neilsen, J Marriner, N Kuropatkin, WG Hartley, F Paz-Chinchón, KD Alexander, E Balbinot, P Blanchard, DA Brown, JL Carlin, C Conselice, ER Cook, A Drlica-Wagner, MR Drout, F Durret, T Eftekhari, B Farr, DA Finley, RJ Foley, W Fong, CL Fryer, J García-Bellido, MSS Gill, RA Gruendl, C Hanna, D Kasen, TS Li, PAA Lopes, ACC Lourenço, R Margutti, JL Marshall, T Matheson, GE Medina, BD Metzger, RR Muñoz, J Muir, M Nicholl, E Quataert, A Rest, M Sauseda, DJ Schlegel, LF Secco, F Sobreira, A Stebbins, VA Villar, AR Walker, W Wester, PKG Williams, A Zenteno, Y Zhang, TMC Abbott, FB Abdalla, M Banerji, K Bechtol, A Benoit-Lévy, E Bertin, D Brooks, E Buckley-Geer, DL Burke, A Carnero Rosell, M Carrasco Kind, J Carretero, FJ Castander, M Croce, CE Cunha, CB D’Andrea, LN da Costa, C Davis, S Desai, JP Dietrich, P Doel, TF Eifler, E Fernandez, B Flaugher, P Fosalba, E Gaztanaga, DW Gerdes, T Giannantonio, DA Goldstein, D Gruen, J Gschwend, G Gutierrez, K Honscheid, B Jain, DJ James, T Jeltema, MWG Johnson, MD Johnson, S Kent, E Krause, R Kron, K Kuehn, S Kuhlmann, O Lahav, M Lima, MAG Maia, M March, RG McMahon, F Menanteau, R Miquel, JJ Mohr, RC Nichol, B Nord, RLC Ogando, D Petravick, AA Plazas, AK Romer, A Roodman, ES Rykoff, E Sanchez, V Scarpine, M Schubnell, I Sevilla-Noarbe, M Smith, RC Smith, E Suchyta, MEC Swanson, G Tarle, D Thomas, RC Thomas, MA Troxel, V Vikram, RH Wechsler, J Weller. “*The Electromagnetic Counterpart of the Binary Neutron Star Merger LIGO/Virgo GW170817. I. Dark Energy Camera Discovery of the Optical Counterpart.*” 2017, [The Astrophysical Journal Letters](#) 848 L16 [1].
16. BP Abbott, R Abbott, TD Abbott, F Acernese, K Ackley, C Adams, T Adams, P Addesso, RX Adhikari,

- VB Adya, **et al.** “A gravitational-wave standard siren measurement of the Hubble constant.” 2017, [Nature, Online](#) [8].
15. LIGO Scientific Collaboration, Virgo Collaboration, & **EM Partners.** “Multi-messenger Observations of a Binary Neutron Star Merger.” 2017, [The Astrophysical Journal Letters](#) **848** L12.
 14. **PS Cowperthwaite**, E Berger, A Rest, R Chornock, DM Scolnic, PKG Williams, W Fong, MR Drout, RJ Foley, R Margutti, R Lunnan, BD Metzger, E Quataert. “An Empirical Study of Contamination in Deep, Rapid, and Wide-Field Optical Follow-Up of Gravitational Wave Events.” 2017, [arxiv:1710.02144](#).
 13. R Lunnan, R Chornock, E Berger, D Milisavljevic, DO Jones, A Rest, W Fong, C Fransson, R Margutti, MR Drout, PK Blanchard, P Challis, **PS Cowperthwaite**, RJ Foley, RP Kirshner, N Morrell, AG Riess, KC Roth, D Scolnic, SJ Smartt, KW Smith, VA Villar, KC Chambers, PW Draper, ME Huber, N Kaiser, R-P Kudritzki, EA Magnier, N Metcalfe, C Waters. “PS1-14bj: A Hydrogen-poor Superluminous Supernova With a Long Rise and Slow Decay.” 2016, [ApJ](#) **831** 144 [27].
 12. M Nicholl, E Berger, R Margutti, R Chornock, PK Blanchard, A Jerkstrand, SJ Smartt, I Arcavi, P Challis, KC Chambers, T-W Chen, **PS Cowperthwaite**, A Gal-Yam, G Hosseinzadeh, DA Howell, C Inserra, E Kankare, EA Magnier, K Maguire, PA Mazzali, C McCully, D Milisavljevic, KW Smith, S Taubenberger, S Valenti, RJ Wainscoat, O Yaron, DR Young. “Superluminous Supernova SN 2015bn in the Nebular Phase: Evidence for the Engine-powered Explosion of a Stripped Massive Star.” 2016, [ApJL](#) **828** L18 [19].
 11. **PS Cowperthwaite**, E Berger, M Soares-Santos, J Annis, D Brout, DA Brown, E Buckley-Geer, SB Cenko, HY Chen, R Chornock, HT Diehl, Z Doctor, A Drlica-Wagner, MR Drout, B Farr, DA Finley, RJ Foley, W Fong, DB Fox, J Frieman, J Garcia-Bellido, MSS Gill, RA Gruendl, K Herner, DE Holz, D Kasen, R Kessler, H Lin, R Margutti, J Marriner, T Matheson, BD Metzger, JEH Neilsen, E Quataert, A Rest, M Sako, D Scolnic, N Smith, F Sobreira, GM Strampelli, VA Villar, AR Walker, W Wester, PKG Williams, B Yanny, TMC Abbott, FB Abdalla, S Allam, R Armstrong, K Bechtol, A Benoit-Lévy, E Bertin, D Brooks, DL Burke, A Carnero Rosell, M Carrasco Kind, J Carretero, FJ Castander, CE Cunha, CB D’Andrea, LN da Costa, S Desai, JP Dietrich, AE Evrard, A Fausti Neto, P Fosalba, DW Gerdes, T Giannantonio, DA Goldstein, D Gruen, G Gutierrez, K Honscheid, DJ James, MWG Johnson, MD Johnson, E Krause, K Kuehn, N Kuropatkin, M Lima, MAG Maia, JL Marshall, F Menanteau, R Miquel, JJ Mohr, RC Nichol, B Nord, R Ogando, AA Plazas, K Reil, AK Romer, E Sanchez, V Scarpine, I Sevilla-Noarbe, RC Smith, E Suchyta, G Tarle, D Thomas, RC Thomas, DL Tucker, J Weller, DES Collaboration. “A DECam Search for an Optical Counterpart to the LIGO Gravitational-wave Event GW151226.” 2016, [ApJL](#) **826** L29 [21].
 10. BP Abbott, R Abbott, TD Abbott, MR Abernathy, F Acernese, K Ackley, C Adams, T Adams, P Addesso, RX Adhikari, **et al.** “Supplement: Localization and Broadband Follow-up of the Gravitational-wave Transient GW150914 (2016, [ApJL](#), 826, L13).” 2016, [ApJS](#) **225** 8 [27].
 9. BP Abbott, R Abbott, TD Abbott, MR Abernathy, F Acernese, K Ackley, C Adams, T Adams, P Addesso, RX Adhikari, **et al.** “Localization and Broadband Follow-up of the Gravitational-wave Transient GW150914.” 2016, [ApJL](#) **826** L13 [137].
 8. M Nicholl, E Berger, SJ Smartt, R Margutti, A Kamble, KD Alexander, T-W Chen, C Inserra, I Arcavi, PK Blanchard, R Cartier, KC Chambers, MJ Childress, R Chornock, **PS Cowperthwaite**, M Drout, HA Flewelling, M Fraser, A Gal-Yam, L Galbany, J Harmanen, TW-S Holoien, G Hosseinzadeh, DA Howell, ME Huber, A Jerkstrand, E Kankare, CS Kochanek, Z-Y Lin, R Lunnan, EA Magnier, K Maguire, C McCully, M McDonald, BD Metzger, D Milisavljevic, A Mitra, T Reynolds, J Saario, BJ Shappee, KW Smith, S Valenti, VA Villar, C Waters, DR Young. “SN 2015BN: A Detailed Multi-wavelength View of a Nearby Superluminous Supernova.” 2016, [ApJ](#) **826** 39 [41].
 7. J Annis, M Soares-Santos, E Berger, D Brout, H Chen, R Chornock, **PS Cowperthwaite**, HT Diehl, Z Doctor, A Drlica-Wagner, MR Drout, B Farr, DA Finley, B Flaugher, RJ Foley, J Frieman, RA Gruendl, K Herner, D Holz, R Kessler, H Lin, J Marriner, E Neilsen, A Rest, M Sako, M Smith, N Smith, F Sobreira,

- AR Walker, B Yanny, TMC Abbott, FB Abdalla, S Allam, A Benoit-Lévy, RA Bernstein, E Bertin, E Buckley-Geer, DL Burke, D Capozzi, A Carnero Rosell, M Carrasco Kind, J Carretero, FJ Castander, SB Cenko, M Croce, CE Cunha, CB D’Andrea, LN da Costa, S Desai, JP Dietrich, TF Eifler, AE Evrard, E Fernandez, J Fischer, W Fong, P Fosalba, DB Fox, CL Fryer, J Garcia-Bellido, E Gaztanaga, DW Gerdes, DA Goldstein, D Gruen, G Gutierrez, K Honscheid, DJ James, I Karliner, D Kasen, S Kent, K Kuehn, N Kuropatkin, O Lahav, TS Li, M Lima, MAG Maia, P Martini, BD Metzger, CJ Miller, R Miquel, JJ Mohr, RC Nichol, B Nord, R Ogando, J Peoples, D Petravic, AA Plazas, E Quataert, AK Romer, A Roodman, ES Rykoff, E Sanchez, B Santiago, V Scarpine, R Schindler, M Schubnell, I Sevilla-Noarbe, E Sheldon, RC Smith, A Stebbins, MEC Swanson, G Tarle, J Thaler, RC Thomas, DL Tucker, V Vikram, RH Wechsler, J Weller, W Wester, DES Collaboration. “*A Dark Energy Camera Search for Missing Supergiants in the LMC after the Advanced LIGO Gravitational-wave Event GW150914.*” 2016, [ApJL 823 L34](#) [16].
6. M Soares-Santos, R Kessler, E Berger, J Annis, D Brout, E Buckley-Geer, H Chen, **PS Cowperthwaite**, HT Diehl, Z Doctor, A Drlica-Wagner, B Farr, DA Finley, B Flaugher, RJ Foley, J Frieman, RA Gruendl, K Herner, D Holz, H Lin, J Marriner, E Neilsen, A Rest, M Sako, D Scolnic, F Sobreira, AR Walker, W Wester, B Yanny, TMC Abbott, FB Abdalla, S Allam, R Armstrong, M Banerji, A Benoit-Lévy, RA Bernstein, E Bertin, DA Brown, DL Burke, D Capozzi, A Carnero Rosell, M Carrasco Kind, J Carretero, FJ Castander, SB Cenko, R Chornock, M Croce, CB D’Andrea, LN da Costa, S Desai, JP Dietrich, MR Drout, TF Eifler, J Estrada, AE Evrard, S Fairhurst, E Fernandez, J Fischer, W Fong, P Fosalba, DB Fox, CL Fryer, J Garcia-Bellido, E Gaztanaga, DW Gerdes, DA Goldstein, D Gruen, G Gutierrez, K Honscheid, DJ James, I Karliner, D Kasen, S Kent, N Kuropatkin, K Kuehn, O Lahav, TS Li, M Lima, MAG Maia, R Margutti, P Martini, T Matheson, RG McMahon, BD Metzger, CJ Miller, R Miquel, JJ Mohr, RC Nichol, B Nord, R Ogando, J Peoples, AA Plazas, E Quataert, AK Romer, A Roodman, ES Rykoff, E Sanchez, V Scarpine, R Schindler, M Schubnell, I Sevilla-Noarbe, E Sheldon, M Smith, N Smith, RC Smith, A Stebbins, PJ Sutton, MEC Swanson, G Tarle, J Thaler, RC Thomas, DL Tucker, V Vikram, RH Wechsler, J Weller, DES Collaboration. “*A Dark Energy Camera Search for an Optical Counterpart to the First Advanced LIGO Gravitational Wave Event GW150914.*” 2016, [ApJL 823 L33](#) [40].
 5. **PS Cowperthwaite**, E Berger. “*A Comprehensive Study of Detectability and Contamination in Deep Rapid Optical Searches for Gravitational Wave Counterparts.*” 2015, [ApJ 814 25](#) [29].
 4. **PS Cowperthwaite**, CS Reynolds. “*Nonlinear Dynamics of Accretion Disks with Stochastic Viscosity.*” 2014, [ApJ 791 126](#) [7].
 3. F Massaro, M Giroletti, R D’Abrusco, N Masetti, A Paggi, **PS Cowperthwaite**, G Tosti, S Funk. “*The Low-frequency Radio Catalog of Flat-spectrum Sources.*” 2014, [ApJS 213 3](#) [18].
 2. **PS Cowperthwaite**, F Massaro, R D’Abrusco, A Paggi, G Tosti, HA Smith. “*Identification of New Gamma-Ray Blazar Candidates with Multifrequency Archival Observations.*” 2013, [AJ 146 110](#) [9].
 1. **PS Cowperthwaite**, CS Reynolds. “*The Central Engine Structure of 3C120: Evidence for a Retrograde Black Hole or a Refilling Accretion Disk.*” 2012, [ApJL 752 L21](#) [22].

Philip S. Cowperthwaite

Presentations List

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Presentation — Talk

- 2017 Oct *Thunch Talk, Princeton, Princeton, NJ*
GW170817: The Dawn of Joint Gravitational Wave and Electromagnetic Astronomy
- 2017 Oct *ITC Luncheon Talk, Harvard, Cambridge, MA*
GW170817: Light Curves and Modeling
- 2017 Oct *Monday Tea Talk, Caltech, Pasadena, CA*
GW170817: The First Joint Gravitational Wave and Electromagnetic Detection
- 2017 Oct *Lunch Talk, Carnegie Observatories, Pasadena, CA*
Deep and Rapid Optical Follow-Up of GW Triggers with DECAM
- 2017 Oct *Astrophysics Seminar, Fermilab, Batavia, IL*
Deep and Rapid Optical Follow-Up of GW Triggers with DECAM
- 2017 Sep *Theory Lunch, Northwestern University, Evanston, IL*
Deep and Rapid Optical Follow-Up of GW Triggers with DECAM
- 2017 Sep *CTC Theory Lunch, UMD, College Park, MD*
Deep and Rapid Optical Follow-Up of GW Triggers with DECAM
- 2017 Aug *INT Workshop and Conference, University of Washington, Seattle, WA*
Deep and Rapid Optical Follow-Up of GW Triggers with DECAM
- 2017 Aug *INT Workshop and Conference, University of Washington, Seattle, WA*
Overview: EM Observations of Kilonovae
- 2016 Nov *Time-Domain Astronomy Workshop, Radcliffe Institute, Cambridge, MA*
Deep and Rapid Optical Follow-Up of GW Triggers with DECAM
- 2016 Jun *GWPAW Workshop 2016, Cape Code, MA*
DECAM Searches for Optical Counterparts to Gravitational Wave Events
- 2016 Apr *APS April Meeting 2016, Salt Lake City, UT*
Identifying Electromagnetic Counterparts to Gravitational Wave Triggers With DECAM
- 2015 Jun *GWPAW Workshop 2015, Osaka, Japan*
A Comprehensive Study of Detectability and Contamination in Deep Rapid Optical Searches for Gravitational Wave Counterparts
- 2012 Aug *Summer REU Colloquium Series, Harvard-Smithsonian CfA, Cambridge, MA*
The Spitzer View of WISE selected blazars

Presentation — Poster

- 2015 Jun *GWPAW Workshop 2015, Osaka, Japan*
A Comprehensive Study of Detectability and Contamination in Deep Rapid Optical Searches for Gravitational Wave Counterparts
- 2013 Jan *221st AAS Meeting, Long Beach, CA*
Piercing the Continuum of WISE selected blazars
- 2012 Jun *Energetic Astronomy, JSI Workshop, Annapolis MD*
The Central Engine Structure of 3c120: Evidence for a Retrograde Black Hole or a Refilling Accretion Disk