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. Theoretical modeling of optical transients associated with binary neutron star mergers (e.g., kilonovae). General time-domain astrophysics: contamination in optical surveys, survey design and optimization, rapid timescale transients. Large-scale astronomy image processing and pipeline development for surveys.

Education

Harvard University, Cambridge, Massachusetts USA
A.M., Astronomy, Spring 2015
Ph.D., Astronomy, Spring 2018
- From Design to Detection: Joint Gravitational Wave and Electromagnetic Astronomy
- Advisor: Prof. 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

Positions

Carnegie Observatories, Pasadena, California USA
NASA Hubble Postdoctoral Fellow, 2018-2021

Awards

National Aeronautics and Space Administration
- Hubble Postdoctoral Fellow, 2018-2021

American Astronomical Society
- Rodger Doxsey Travel Prize, 2018

Harvard University
- Fireman Thesis Prize, 2018
- 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 May 15, 2018 I am an author on 31 refereed publications (7 as first author), my h-index is 21 and my refereed publications have 1437 citations. First author papers are shown here. A full publication list is available below.

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

Conferences and Presentations

As of May 15, 2017 I have given 24 presentations of which 21 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

Philip S. Cowperthwaite

Publications

Updated May 15, 2018. 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 31 refereed publications (7 as first author), my h-index is 21 and my refereed publications have 1437 citations.

Refereed

31. KD Alexander, R Margutti, PK Blanchard, W Fong, E Berger, A Hajela, T Eftekhari, R Chornock, **PS Cowperthwaite**, D Giannios, C Guidorzi, A Kathirgamaraju, A MacFadyen, BD Metzger, M Nicholl, L Sironi, VA Villar, PKG Williams, X Xie, J Zrake. *"A Decline in the X-ray through Radio Emission from GW170817 Continues to Support an Off-Axis Structured Jet."* 2018, arxiv:1805.02870 [1].

30. J Guillochon, **PS Cowperthwaite**. *"Open Astronomy Catalogs API."* 2018, RNAAS 2 27.

29. **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."* 2018, ApJ 858 18 [1].

28. R Margutti, KD Alexander, X Xie, L Sironi, BD Metzger, A Kathirgamaraju, W Fong, PK Blanchard, E Berger, A MacFadyen, D Giannios, C Guidorzi, A Hajela, R Chornock, **PS Cowperthwaite**, T Eftekhari, M Nicholl, VA Villar, PKG Williams, J Zrake. *"The Binary Neutron Star Event LIGO/Virgo GW170817 160 Days after Merger: Synchrotron Emission across the Electromagnetic Spectrum."* 2018, ApJ 856 L18 [30].

27. M Cantiello, JB Jensen, JP Blakeslee, E Berger, AJ Levan, NR Tanvir, G Raimondo, E Brocato, KD Alexander, PK Blanchard, M Branchesi, Z Cano, R Chornock, S Covino, **PS Cowperthwaite**, P D\textquoterightAvanzo, T Eftekhari, W Fong, AS Fruchter, A Grado, J Hjorth, DE Holz, JD Lyman, I Mandel, R Margutti, M Nicholl, VA Villar, PKG Williams. *"A Precise Distance to the Host Galaxy of the Binary Neutron Star Merger GW170817 Using Surface Brightness Fluctuations."* 2018, ApJ 854 L31 [5].

26. D Scolnic, R Kessler, D Brout, **PS Cowperthwaite**, M Soares-Santos, J Annis, K Herner, H-Y Chen, M Sako, Z Doctor, Butler. *"How Many Kilonovae Can Be Found in Past, Present, and Future Survey Data Sets?."* 2018, ApJ 852 L3 [7].

25. VA Villar, J Guillochon, E Berger, BD Metzger, **PS Cowperthwaite**, M Nicholl, KD Alexander, PK Blanchard, R Chornock, T Eftekhari, W Fong, R Margutti, PKG Williams. *"The Combined Ultraviolet, Optical, and Near-infrared Light Curves of the Kilonova Associated with the Binary Neutron Star Merger GW170817: Unified Data Set, Analytic Models, and Physical Implications."* 2017, ApJL 851 L21 [35].

24. C Guidorzi, R Margutti, D Brout, D Scolnic, W Fong, KD Alexander, **PS Cowperthwaite**, J Annis, E Berger, PK Blanchard, R Chornock, DL Coppejans, T Eftekhari, JA Frieman, D Huterer, M Nicholl, M Soares-Santos, G Terreran, VA Villar, PKG Williams. *"Improved Constraints on H0 from a Combined Analysis of Gravitational-wave and Electromagnetic Emission from GW170817."* 2017, ApJ 851 L36 [19].

23. BP Abbott, R Abbott, TD Abbott, F Acernese, K Ackley, C Adams, T Adams, P Addesso, RX Adhikari, VB Adya, **al.**. *"A gravitational-wave standard siren measurement of the Hubble constant."* 2017, Nature 551 85-88 [92].

22. 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, ApJL 848 L23 [25].

21. 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, ApJL 848 L22 [23].

20. 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, ApJL 848 L21 [68].

19. 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, H 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, ApJL 848 L20 [84].

18. 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, B Farr, RJ Foley, JA Frieman, CL Fryer, K Herner, DE Holz, R Kessler, 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, ApJL 848 L19 [61].

17. M Nicholl, E Berger, D Kasen, BD Metzger, J Elias, C Briceño, 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 Dennihy, 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, ApJL 848 L18 [62].

16. **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 Crocce, 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 Nuropatkin, 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-infrared Light Curves and Comparison to Kilonova Models."* 2017, ApJL 848 L17 [87].

15. M Soares-Santos, DE Holz, J Annis, R Chornock, K Herner, E Berger, D Brout, H-Y 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, **PS 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, K Vivas, 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 Crocce, 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, DE Survey, DECGW-EM Collaboration. *"The Electromagnetic Counterpart of the Binary Neutron Star Merger LIGO/Virgo GW170817. I. Discovery of the Optical Counterpart Using the Dark Energy Camera."* 2017, ApJL 848 L16 [65].

14. BP Abbott, R Abbott, TD Abbott, F Acernese, K Ackley, C Adams, T Adams, P Addesso, RX Adhikari, VB Adya, **al.**. *"Multi-messenger Observations of a Binary Neutron Star Merger."* 2017, ApJL 848 L12 [279].

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 [34].

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 [26].

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 [29].

10. BP Abbott, R Abbott, TD Abbott, MR Abernathy, F Acernese, K Ackley, C Adams, T Adams, P Addesso, RX Adhikari, **al.**. *"Supplement: Localization and Broadband Follow-up of the Gravitational-wave Transient GW150914 (2016, ApJL, 826, L13)."* 2016, ApJS 225 8 [34].

9. BP Abbott, R Abbott, TD Abbott, MR Abernathy, F Acernese, K Ackley, C Adams, T Adams, P Addesso, RX Adhikari, **al.**. *"Localization and Broadband Follow-up of the Gravitational-wave Transient GW150914."* 2016, ApJL 826 L13 [167].

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 [51].

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 Crocce, 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 [17].

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 Crocce, 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 [43].

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 [33].

4. **PS Cowperthwaite**, CS Reynolds. *"Nonlinear Dynamics of Accretion Disks with Stochastic Viscosity."* 2014, ApJ 791 126 [8].

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 [11].

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

Updated May 15, 2018.

Presentation — Talk

2018 May	*Fireman Prize Talk, Harvard, Cambridge, MA* From Design to Detection: Joint Gravitational Wave and Electromagnetic Astronomy
2018 May	*Sackler Conference 2018: Gravitational Wave Astrophysics, Cambridge, MA* Panelist on Future of EM Follow-Up
2018 April	*Harvard Public Thesis Defense, Harvard, Cambridge, MA* From Design to Detection: Joint Gravitational Wave and Electromagnetic Astronomy
2017 Dec	*ITC Luncheon Talk, Harvard, Cambridge, MA* Local Cosmology with Gravitational Waves
2017 Nov	*BHI Journal Club, Harvard, Cambridge, MA* GW170817: Light Curves and Modeling
2017 Nov	*CosmoFest, Harvard, Cambridge, MA* Local Cosmology with Gravitational Waves
2017 Nov	*High Energy Lunch Talk, Harvard, Cambridge, MA* An r-process Kilonova Associated with the Gravitational Wave Event GW170817
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