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, 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, 2010–2012
- 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 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
  - 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 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

As of October 19, 2017 I am an author on 26 refereed publications (7 as first author), my h-index is 11 and my refereed publications have 388 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 October 19, 2017 I have given 16 presentations of which 13 have been talks and 3 have been posters. A complete listing of talks and posters is available below.

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 Oct 19, 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 388 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 H0 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.

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 Efterkari, 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 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, 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 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 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, **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, 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. *"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.

16. 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 Advanced Online Publishing –.

15. The 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 [25].

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 [17].

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 [20].

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 [25].

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 [128].

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 [39].

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 [15].

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 [37].

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 [28].

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 [17].

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 [21].

Philip S. Cowperthwaite

Presentations List

Updated Oct 19, 2017.

Presentation — Talk

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