

Blake D. Sherwin – Curriculum Vitae

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| General Information | Address: Lawrence Berkeley National Laboratory 50B, 1 Cyclotron Rd, Berkeley CA 94720, USA E-mail: BDSherwin@lbl.gov Telephone: (609) 651-6906 |
| Education | Princeton University 2008-2013 Ph.D., Physics (2013) Thesis adviser: Prof. David N. Spergel M.A., Physics (2010) University of Cambridge, UK 2004-2008 M.Math. (2008), Part III of the Mathematical Tripos, with Distinction and Tyson Medal B.A., Physics (2007), Natural Sciences Tripos, First Class honours in all three years |
| Academic Appointments | NASA Einstein Fellow, Lawrence Berkeley National Laboratory, 2016- Berkeley Center for Cosmological Physics / LBL Physics Division Miller Research Fellow, University of California, Berkeley, 2013-2016 Department of Physics / Berkeley Center for Cosmological Physics / Miller Institute (5-year appointment with BCCP Fellowship extension) Graduate Researcher, NSF and Procter Fellow, Princeton University 2008-2013 Ph.D. thesis title: <i>Cosmology from Secondary Anisotropies of the CMB</i> Research advisers: Prof. David N. Spergel, Prof. Matias Zaldarriaga |
| Research Interests | Cosmology, data analysis and theory CMB lensing, CMB physics Large-scale structure, baryon acoustic oscillations, galaxy lensing, quasars, CIB Sunyaev-Zel'dovich effect and galaxy clusters |
| Honors and Awards | STFC Ernest Rutherford Fellowship, (2016, deferred until 2017) Einstein Fellowship, NASA (2016-2019, also awarded & declined 2013) Miller Research Fellowship, Miller Inst. for Basic Research in Science, UC Berkeley (2013-2016) Berkeley Center for Cosmological Physics (BCCP) Fellowship (2016-2018, awarded 2013) Charlotte Elizabeth Procter Honorific Fellowship, Princeton University (2012-2013) Centennial Fellowship, Princeton University (2008-2012) National Science Foundation Graduate Research Fellowship (2008-2012) Prospects in Theoretical Physics Best Speaker Award, Institute for Advanced Study (2011) Joseph Henry Prize, Department of Physics, Princeton University (2008) Tyson Medal for Mathematics and Astronomy, University of Cambridge (2008) Bateman Scholarship, Trinity Hall, Cambridge (2007) Trinity Hall College Scholarship, Trinity Hall, Cambridge (2005/2006/2008) Nuffield Foundation Science Bursary (with Prof. Donald Lynden-Bell), Cambridge IoA (2006) Abitur Grade 1.0, German School London, London, U.K. (2004) |
| Collaboration Membership | ACTPol / Advanced ACT Collaboration – lensing working group co-lead Simons Observatory – lensing working group co-lead CMB Stage-IV lensing working group – author, science book lensing chapter POLARBEAR Collaboration Large Synoptic Survey Telescope Dark Energy Science Collaboration LiteBIRD working group – Co-I, NASA phase A study |

Publications

Papers led or co-led (first, second or third author papers or equivalent collaboration papers):

* indicates work led by a student I advised or co-advised

- [1] **Sherwin, B. D.**, et al. 2016, arXiv:1611.09753, Physical Review D submitted
“The Atacama Cosmology Telescope: Two-Season ACTPol Lensing Power Spectrum”
- *[2] Larsen, P., Challinor, A., **Sherwin, B. D.**, & Mak, D. 2016, Physical Review Letters, 117, 151102
“A first demonstration of CIB delensing”
- *[3] Böhm, V., Schmittfull, M., & **Sherwin, B. D.** 2016, Physical Review D 94, 043519
“Bias to CMB lensing measurements from the bispectrum of large-scale structure”
- [4] Liu, J., Hill, J. C., **Sherwin, B. D.**, et al. 2016, arXiv:1608.03169, Physical Review D Submitted
“CMB Lensing Beyond the Power Spectrum: Cosmological Constraints from the One-Point PDF and Peak Counts”
- [5] Namikawa, T., Yamauchi, D., **Sherwin, B.**, & Nagata, R. 2016, Physical Review D 93, 043527
“Delensing cosmic microwave background B modes with the Square Kilometre Array Radio Continuum Survey”
- [6] **Sherwin, B. D.**, Schmittfull, M., 2015, Physical Review D 92, 043005
“Delensing the CMB with the Cosmic Infrared Background”
- [7] van Engelen, A., **Sherwin, B. D.**, et al. 2015, The Astrophysical Journal, 808, 7
“The Atacama Cosmology Telescope: Lensing of CMB Temperature and Polarization Derived from Cosmic Infrared Background Cross-Correlation”
- [8] Ferraro, S., **Sherwin, B. D.**, Spergel, D. N. 2015, Physical Review D 91, 083533
“A WISE measurement of the ISW effect”
- *[9] Allison, R., Lindsay, S., **Sherwin, B. D.**, et al. 2015, Monthly Notices of the Royal Astronomical Society, 451, 5368
“The Atacama Cosmology Telescope: measuring radio galaxy bias through cross-correlation with lensing”
- [10] Hill, J. C., **Sherwin, B. D.**, et al. 2014, arXiv:1411.8004, Physical Review D submitted
“The Atacama Cosmology Telescope: A Measurement of the Thermal Sunyaev-Zel’dovich One-Point PDF”
- *[11] Pearson, R., **Sherwin, B. D.**, Lewis, A. 2014, Physical Review D 90, 023539
“CMB lensing reconstruction using cut sky polarization maps and pure-B modes”
- [12] POLARBEAR Collaboration / **Sherwin, B. D.** corresponding author, 2014, Physical Review Letters 112, 131302
“Evidence for Gravitational Lensing of the Cosmic Microwave Background Polarization from Cross-correlation with the Cosmic Infrared Background”
- [13] POLARBEAR Collaboration (incl. **Sherwin, B. D.**), 2014, Physical Review Letters 113, 021301
“Measurement of the Cosmic Microwave Background Polarization Lensing Power Spectrum with the POLARBEAR experiment”
- [14] Hill, J. C., & **Sherwin, B. D.** 2013, Physical Review D, 87, 023527
“Cosmological Constraints from Moments of the Thermal Sunyaev-Zel’dovich Effect”
- [15] **Sherwin, B. D.**, Das, S., Hajian, A. et al. 2012, Physical Review D, 86, 083006
“The Atacama Cosmology Telescope: Cross-correlation of CMB Lensing and Quasars”
- *[16] Wilson, M. J., **Sherwin, B. D.** (corresponding author), et al. 2012, Physical Review D, 86, 122005
“The Atacama Cosmology Telescope: A Measurement of the Sunyaev-Zel’dovich Effect Using the Skewness of the CMB Temperature Distribution”
(undergraduate student research project planned and supervised by BDS)
- [17] **Sherwin, B. D.** & Zaldarriaga, M. 2012, Physical Review D, 85, 103523

“The Shift of the Baryon Acoustic Oscillation Scale: A Simple Physical Picture”

[18] Gonzales-Morales, A. X., Poltis, R., **Sherwin, B. D.**, Verde, L. 2011, arXiv:1106.5052

“Are priors responsible for cosmology favoring additional neutrino species?”

[19] **Sherwin, B. D.**, Dunkley, J., Das, S., et al. 2011, Physical Review Letters, 112, 021302

“Evidence for Dark Energy from the Cosmic Microwave Background Alone Using the Atacama Cosmology Telescope Lensing Measurements”

[20] Das, S., **Sherwin, B. D.**, et al. 2011, Physical Review Letters, 112, 021301

“Detection of the Power Spectrum of Cosmic Microwave Background Lensing by the Atacama Cosmology Telescope”

[21] **Sherwin, B. D.**, & Das, S. 2010, arXiv:1011.4510

“CMB Lensing – Power Without Bias”

[22] **Sherwin, B. D.**, Loeb, A., & O’Leary, R. M. 2008, Monthly Notices of the Royal Astronomical Society, 386, 1179

“Hypervelocity stars from the Andromeda galaxy”

[23] **Sherwin, B. D.**, & Lynden-Bell, D. 2007, Monthly Notices of the Royal Astronomical Society, 378, 409

“Electromagnetic fields in jets”

Papers as part of main science team (with substantial contribution):

[24] Miyatake, H., Madhavacheril, M. S., Sehgal, N., Slozar, A., Spergel, D. N., **Sherwin, B. D.**, van Engelen, A. 2016, arXiv:1605.05337, Physical Review D submitted

“Measurement of a Cosmographic Distance Ratio with Galaxy and CMB Lensing”

[25] Schmittfull, M., Feng, Y., Beutler, F., **Sherwin, B. D.** Chu, M. Y., 2015, Physical Review D 92, 123522

“Eulerian BAO Reconstructions and N-Point Statistics”

[26] Liu, A., Pritchard, J. R., Allison, R., Parsons, A. R., Seljak, U. & **Sherwin, B. D.** 2015, Physical Review D 93, 043013

“Eliminating the optical depth nuisance from the CMB with 21 cm cosmology”

[27] POLARBEAR Collaboration (incl. **Sherwin, B. D.**), 2015, arXiv:1509.02461, Physical Review D 92, 123509

“POLARBEAR Constraints on Cosmic Birefringence and Primordial Magnetic Fields”

[28] Madhavacheril, M., et al. (incl. **Sherwin, B. D.**), 2015, Physical Review Letters, 114, 151302

“Evidence of Lensing of the Cosmic Microwave Background by Dark Matter Halos”

[29] Hand, N., Leauthaud, A., Das, S., **Sherwin, B. D.**, et al. 2015, Physical Review D, 91, 062001

“First Measurement of the Cross-Correlation of CMB Lensing and Galaxy Lensing”

[30] Louis, T., Naess, S., Das, S., Dunkley, J., & **Sherwin, B. D.** 2013, Monthly Notices of the Royal Astronomical Society, 435, 2040

“Lensing simulation and power spectrum estimation for high-resolution CMB polarization maps”

[31] Das, S. et al. (incl. **Sherwin, B. D.**) 2013, arXiv:1301.1037, Journal of Cosmology and Astroparticle Physics, 4, 014

“The Atacama Cosmology Telescope: Temperature and Gravitational Lensing Power Spectrum Measurements from Three Seasons of Data”

[32] Galli, S., Martinelli, M., Melchiorri, A., Pagano, L., **Sherwin, B. D.**, & Spergel, D. N. 2010, Physical Review D, 82, 123504

“Constraining fundamental physics with future CMB experiments”

[33] Das, S. et al. (incl. **Sherwin, B. D.**) 2011, The Astrophysical Journal, 729, 62

“The Atacama Cosmology Telescope: A Measurement of the Cosmic Microwave Background Power Spectrum at 148 and 218 GHz from the 2008 Southern Survey”

Additional publications with some contribution:

- [34] Abazajian, K., et al. (incl. **Sherwin, B. D.**) 2016, arXiv:1610.02743
“CMB-S4 Science Book, First Edition”
- [35] Louis, T., et al. (incl. **Sherwin, B. D.**) 2016, arXiv:1610.02360, The Astrophysical Journal submitted
“The Atacama Cosmology Telescope: Two-Season ACTPol Spectra and Parameters”
- [36] Inoue, Y., Ade, P., Akiba, Y., et al. (incl. **Sherwin, B. D.**) 2016, arXiv:1608.03025
“POLARBEAR-2: an instrument for CMB polarization measurements”
- [37] Suzuki, A., Ade, P., Akiba, Y., et al. (incl. **Sherwin, B. D.**) 2016, Journal of Low Temperature Physics, 184, 805
“The POLARBEAR-2 and the Simons Array Experiment”
- [38] Schaan, E., Ferraro, S., Vargas-Magaña, M., et al. (incl. **Sherwin, B. D.**) 2015, Physical Review D 93, 082002
“Evidence for the kinematic Sunyaev-Zel’dovich effect with ACTPol and velocity reconstruction from BOSS”
- [39] Henderson, S. W., Allison, R., Austermann, J., et al. (incl. **Sherwin, B. D.**) 2016, Journal of Low Temperature Physics, 184, 772
“Advanced ACTPol Cryogenic Detector Arrays and Readout”
- [40] Battaglia, N., et al. (incl. **Sherwin, B. D.**) 2015, arXiv:1509.08930, Journal of Cosmology and Astroparticle Physics submitted
“Weak-Lensing Mass Calibration of the Atacama Cosmology Telescope Equatorial Sunyaev-Zeldovich Cluster Sample with the Canada-France-Hawaii Telescope Stripe 82 Survey”
- [41] Errard, J., et al. (incl. **Sherwin, B. D.**) 2015, The Astrophysical Journal, 809, 63
“Atmospheric contamination for CMB ground-based observations”
- [42] Arnold, K., et al. (incl. **Sherwin, B. D.**) 2014, Proc. SPIE, 9153, 91531F
“The Simons Array: expanding POLARBEAR to three multi-chroic telescopes”
- [43] Naess, S. K., et al. (incl. **Sherwin, B. D.**) 2014, Journal of Cosmology and Astroparticle Physics, 10, 007
“The Atacama Cosmology Telescope: CMB polarization at $200 < l < 9000$ ”
- [44] POLARBEAR Collaboration (incl. **Sherwin, B. D.**) 2014, The Astrophysical Journal, 794, 171
“A Measurement of the Cosmic Microwave Background B-Mode Polarization Power Spectrum at Sub-Degree Scales with POLARBEAR”
- [45] Calabrese, E. et al. (incl. **Sherwin, B. D.**) 2013, Physical Review D, 87, 103012
“Cosmological parameters from pre-planck cosmic microwave background measurements”
- [46] Sievers, J. et al. (incl. **Sherwin, B. D.**) 2013, Journal of Cosmology and Astroparticle Physics, 10, 060
“The Atacama Cosmology Telescope: Cosmological parameters from three seasons of data”
- [47] Hasselfield, M. et al. (incl. **Sherwin, B. D.**) 2013, arXiv:1301.0816, Journal of Cosmology and Astroparticle Physics, 7, 008
“The Atacama Cosmology Telescope: Sunyaev-Zel’dovich Selected Galaxy Clusters at 148 GHz from Three Seasons of Data”
- [48] Dünner, R. et al. (incl. **Sherwin, B. D.**) 2012, The Astrophysical Journal Supplement, 762, 1
“The Atacama Cosmology Telescope: Data Characterization and Map Making”
- [49] Sehgal, N. et al. (incl. **Sherwin, B. D.**) 2012, The Astrophysical Journal, 767, 38
“The Atacama Cosmology Telescope: Relation Between Galaxy Cluster Optical Richness and Sunyaev-Zel’dovich Effect”
- [50] Hlozek, R. et al. (incl. **Sherwin, B. D.**) 2011, The Astrophysical Journal, 749, 90
“The Atacama Cosmology Telescope: a measurement of the primordial power spectrum”
- [51] Hand, N. et al. (incl. **Sherwin, B. D.**) 2011, The Astrophysical Journal, 736, 39

- “The Atacama Cosmology Telescope: Detection of Sunyaev-Zel’dovich Decrement in Groups and Clusters Associated with Luminous Red Galaxies”
- [52] Marriage, T. A. et al. (incl. **Sherwin, B. D.**) 2011, The Astrophysical Journal, 737, 61
“The Atacama Cosmology Telescope: Sunyaev Zel’dovich Selected Galaxy Clusters at 148 GHz in the 2008 Survey”
- [53] Sehgal, N. et al. (incl. **Sherwin, B. D.**) 2011, The Astrophysical Journal, 732, 44
“The Atacama Cosmology Telescope: Cosmology from Galaxy Clusters Detected via the Sunyaev-Zel’dovich Effect”
- [54] Dunkley, J. et al. (incl. **Sherwin, B. D.**) 2011, The Astrophysical Journal, 739, 52
“The Atacama Cosmology Telescope: Cosmological Parameters from the 2008 Power Spectrum”
- [55] Hajian, A. et al. (incl. **Sherwin, B. D.**) 2011, The Astrophysical Journal, 740, 86
“The Atacama Cosmology Telescope: Calibration with WMAP Using Cross-Correlations”
- [56] Marriage, T. A. et al. (incl. **Sherwin, B. D.**) 2011, The Astrophysical Journal, 731, 100
The Atacama Cosmology Telescope: Extragalactic Sources at 148 GHz in the 2008 Survey
- [57] Cooray, A., et al. (incl. **Sherwin, B. D.**) 2010, arXiv:1007.3519
“The Herschel-SPIRE Legacy Survey (HLSL): the scientific goals of a shallow and wide submillimeter imaging survey with SPIRE”

Manuscripts in preparation:

Please contact me for a current list.

Selected Talks

- KICP Colloquium, University of Chicago, Chicago, IL (1/2017, upcoming invited)
- Physics Colloquium, University of New Mexico, Albuquerque, NM (1/2017, upcoming invited)
- B-Mode from Space II Workshop, Montreal, Canada (1/2017, upcoming invited)
- McGill Space Institute Seminar, Montreal, Canada, (11/2016 invited)
- Einstein Fellows Symposium, Harvard-Smithsonian CfA, Cambridge, MA (10/2016 invited)
- APS CPAD New Technologies for Discovery Meeting, Caltech, Pasadena, CA (10/2016 invited)
- Future Cosmic Surveys Meeting, Chicago, IL (9/2016, invited)
- CMB Stage-IV Meeting, University of Chicago, Chicago, IL (9/2016, invited)
- A Century of Gravitational Lensing Conference, Leiden U., Netherlands (7/2016, invited review)
- LSST DESC Meeting, Oxford, UK (7/2016, invited)
- Cosmological Probes of Fundamental Physics, Weizmann Institute, Israel (6/2016, invited)
- KICP Seminar, Kavli Institute for Cosmological Physics, Chicago, IL (5/2016, invited)
- HEP Division Seminar, Argonne National Laboratory, Lemont, IL (4/2016, invited)
- Cosmology with CMB Stage-IV Workshop, LBNL, Berkeley, CA (3/2016, invited)
- Physics Colloquium, University of Michigan, Ann Arbor, MI (1/2016, invited)
- Cosmology Seminar, University of Sussex, Brighton, UK (1/2016, invited)
- B-Mode from Space Workshop, IPMU, Kashiwa-no-ha, Japan (12/2015, invited)
- COFI Workshop on Gravitational Waves, San Juan, Puerto Rico (12/2015, invited)
- Astrophysics Seminar, Northwestern University, Evanston, IL (10/2015, invited)
- Cosmology with CMB Stage-IV Workshop, University of Michigan, Ann Arbor (9/2015, invited)
- Rencontres du Vietnam Cosmology Conference, Qui Nhon, Vietnam (8/2015)
- Cosmology Seminar, University of California, Santa Cruz, CA (5/2015, invited)
- Cosmology Seminar, University of California, Davis, CA (4/2015, invited)
- KIPAC Seminar, Stanford University, CA (4/2015, invited)

LSST DESC Meeting, University of Pittsburgh, Pittsburgh, PA (4/2015, invited)
 Winter Cosmology Conference, Aspen Center for Physics, Aspen, CO (3/2015)
 Computing the Universe Conference, University of California, Berkeley, CA (1/2015, invited)
 Portsmouth Institute for Cosmology and Gravitation Seminar, UK (10/2014, invited)
 Munich Institute for Astroparticle Physics Workshop, Germany (9/2014)
 COSMO2014 conference, University of Chicago, IL (8/2014)
 GR Seminar, DAMTP, University of Cambridge, UK (3/2014, invited)
 Cosmology Seminar, Perimeter Institute, Waterloo, Canada (11/2013, invited)
 CASS Colloquium, UC San Diego, CA (8/2013, invited)
 CosmoLens Meeting, LAM/Marseille, France (5/2013, invited)
 CAS Seminar, Johns Hopkins University, Baltimore, MD (2/2013, invited)
 ITC Seminar, Harvard-Smithsonian Center for Astrophysics, Cambridge, MA (10/2012)
 BCCP Seminar, University of California, Berkeley, CA (9/2012)
 Stanford Cosmology Seminar, Stanford University, Stanford, CA (9/2012)
 CCAPP Seminar, The Ohio State University, Columbus, OH (9/2012)
 IoA Wednesday Seminar, Institute of Astronomy, Cambridge University, UK (6/2012)
 Cosmology Seminar, University of Sussex, Brighton, UK (6/2012)
 Prospects in Theoretical Physics Summer School, Institute for Advanced Study, Princeton (7/2011)
 Astronomy Colloquium, University College London, UK (6/2011)
 Astrophysics Seminar, Department of Physics, Cambridge University, UK (6/2011)
 Astrophysics Group Seminar, Department of Physics, Oxford University, UK (6/2011, invited)
 ISCAP Seminar, Columbia University, New York, NY (5/2011)
 Berkeley CMB Lensing Workshop, University of California, Berkeley, CA (4/2011, invited)
 Astrophysics Seminar, Institute for Advanced Study, Princeton, NJ (12/2010)

Teaching Experience

Advising experience:

Adviser for graduate research project with Vanessa Boehm (MPA), resulted in first author publication (Boehm et al. 2016)
 Co-adviser for graduate research project with Patricia Larsen (Cambridge), resulted in first author publication (Larsen et al. 2016)
 Co-adviser for graduate research project with Rupert Allison (Oxford), resulted in first author publication (Allison et al. 2015)
 Co-adviser for graduate research project with Nick Hand (Berkeley), resulted in first author publication (Hand et al. 2014)
 Adviser for undergraduate research project of Michael Wilson (visiting from Oxford University, 2011), resulted in first author publication (Wilson et al. 2012)
 Adviser for undergraduate research project of Tashalee Billings (visiting from Florida A&M University, 2012)
 Adviser for undergraduate research project of Mykyta Hulko (visiting from Cornell University, 2012)
 Co-adviser for senior thesis project of Anna Patej (2012)

Lecturing and teaching experience:

Mathematics Lecturer / Instructor, Mathematics 50A/50B/Calculus and Precalculus Study Group, Prison University Project, Patton College at San Quentin State Prison (2013/2014/2015/2016)
 Guest Lecturer, Graduate Cosmology Seminar, Department of Physics, UC Berkeley (2014/2015/2016)

Assistant in Instruction, Astronomy 203, Department of Astrophysical Sciences, Princeton University (2011-2012)

Volunteer GED Math and Science Instructor, The Rescue Mission, Trenton (2010-2012)

**Academic
Service**

Referee for The Astrophysical Journal, The Astrophysical Journal Letters, Physical Review Letters, Physical Review D, Journal of Cosmology and Astroparticle Physics, Astronomy and Astrophysics, Monthly Notices of the Royal Astronomical Society

NSF grant review panel service

Conference or workshop organizer: Berkeley Workshop on Neutrinos and Light Particles in Cosmology (2016), Berkeley Workshop on Sampling Methods (2016), Computing the Universe Conference, Berkeley, CA (2015)

References

Prof. David N. Spergel, Princeton University / Simons CCA E-mail: dns@astro.princeton.edu

Prof. Adrian T. Lee, University of California, Berkeley E-mail: adrian.lee@berkeley.edu

Prof. Joanna Dunkley, Princeton University E-mail: jdunkley@princeton.edu

Prof. Uroš Seljak, University of California, Berkeley E-mail: useljak@berkeley.edu