

JEFFREY P. FILIPPINI – CURRICULUM VITAE

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ACADEMIC APPOINTMENTS

| | |
|--|---------------------|
| University of Illinois, Urbana-Champaign | Urbana, IL |
| Assistant Professor, Department of Physics; Faculty Affiliate in Astronomy | 2015–Present |
| California Institute of Technology | Pasadena, CA |
| Robinson Postdoctoral Scholar in Experimental Astrophysics | 2011–2014 |
| Moore Prize Postdoctoral Scholar in Experimental Physics | 2008–2011 |

EDUCATION

| | |
|--|----------------------|
| University of California, Berkeley | Berkeley, CA |
| Ph.D., Physics; Thesis advisor: Bernard Sadoulet | 2002–2008 |
| Thesis: “A Search for WIMP Dark Matter Using the First Five-Tower Run of the Cryogenic Dark Matter Search” | |
| Harvard University | Cambridge, MA |
| A.B. <i>summa cum laude</i> , Chemistry and Physics | 1998–2002 |

HONORS AND RECOGNITION

| | |
|--|-----------|
| Fellow, Center for Advanced Study (CAS), UIUC | 2018–2019 |
| Collins Scholar, UIUC Academy for Excellence in Engineering Education | 2015–2016 |
| Antarctic Service Medal | 2015 |
| National Defense Science and Engineering Graduate (NDSEG) Fellowship | 2002–2005 |
| U.S. National Chemistry Olympiad - National Finalist (<i>20 in nation</i>) for IChO team | 1997 |

RESEARCH GRANTS

Funded investigators; lead PI listed first

| | |
|--|-----------|
| NASA APRA, <i>Taurus: A Balloon-Borne Polarimeter for Cosmic Reionization and Galactic Dust</i> (S. Benton, J. Filippini , A. Fraisse, W. Jones, L. Moncelsi, J. Nagy) | 2021–2026 |
| NASA APRA, <i>Development of an On-Chip Integrated Spectrometer for Far-IR Astrophysics</i> (J. Filippini , E. Shirokoff, M. Zemcov) | 2020–2022 |
| DOE HEP, <i>Experimental High Energy Physics at the University of Illinois</i> (J. Filippini , K. Pitts, J. Vieira) | 2020–2023 |
| NASA SAT, <i>Superconducting Antenna-Coupled Detectors and Readouts for CMB Polarimetry in PICO</i> (R. O’Brien, J. Filippini) | 2020–2022 |
| NASA APRA, <i>The Spectroscopic Terahertz Airborne Receiver for Far-Infrared Exploration (STARFIRE): a Next-Generation Experiment for Galaxy Evolution Studies</i> (J. Vieira, J. Aguirre, C.M. Bradford, J. Filippini , C. Groppi, D. Marrone, P. Mausekopf) | 2019–2024 |
| NASA SAT, <i>Superconducting Antenna-Coupled Detectors for CMB Polarimetry with the Inflation Probe</i> (J. Bock, J. Filippini) | 2018–2020 |
| NASA APRA, <i>Spider: Probing the Early Universe with a Large-Scale CMB Polarization Survey</i> (J. Bock, J. Filippini) | 2017–2020 |
| NASA SAT, <i>Superconducting Antenna-Coupled Detectors and Readouts for Space-Borne CMB Polarimetry</i> (J. Bock, J. Filippini) | 2016–2017 |

RESEARCH INTERESTS AND COLLABORATIONS

Astrophysical probes of fundamental physics and cosmic origins; Sub-Kelvin radiation detectors and readout systems; Cosmic microwave background (*BICEP/Keck Array*, *CMB-S4*, *SPIDER*, *Taurus*); Terahertz observations (*TIM / STARFIRE*); Searches for particle dark matter (*CDMS-II*)

PUBLICATIONS

N.B. In most of my scientific collaborations it is customary to list authors alphabetically on major publications, with exceptions mostly for technical and conference papers.

REFEREED JOURNAL ARTICLES (in print or accepted)

1. P.A.R. Ade *et al.*, "BICEP / Keck Array XII: Constraints on axion-like polarization oscillations in the cosmic microwave background", *Phys. Rev. D* **103**, 042002 (2021); arXiv:2011.03483
2. P.A.R. Ade *et al.*, "A Demonstration of Improved Constraints on Primordial Gravitational Waves with Delensing", *Phys. Rev. D* **103**, 022004 (2021); arXiv:2011.08163
3. R. Nie, R.M.J. Janssen, C.M. Bradford, **J.P. Filippini**, S. Hailey-Dunsheath, "Optimization of a Quasi-Mesh Absorber for the Terahertz Intensity Mapper", *IEEE Trans. Terahertz Sci. Technol.*, vol. 10, no. 6, pp. 704-712 (2020)
4. G. Baym, D.H. Beck, **J.P. Filippini**, C.J. Pethick, J. Shelton, "Searching for low mass dark matter by detecting phonons in superfluid helium", *Phys. Rev. D* **102**, 035014 (2020); arXiv:2005.08824
5. P.A.R. Ade *et al.*, "BICEP2 / Keck Array XI: Beam Characterization and Temperature-to-Polarization Leakage in the BK15 Dataset", *Astrophys. J.* **844**, 114 (2019); arXiv:1904.01640
6. P.A.R. Ade *et al.*, "BICEP2 / Keck Array X: Constraints on Primordial Gravitational Waves using Planck, WMAP, and New BICEP2/Keck Observations through the 2015 Season", *Phys. Rev. Lett.* **121**, 221301 (2018); arXiv:1810.05216
7. P.A.R. Ade *et al.*, "BICEP2 / Keck Array IX: New Bounds on Anisotropies of CMB Polarization Rotation and Implications for Axion-Like Particles and Primordial Magnetic Fields", *Phys. Rev. D* **96**, 102003 (2017); 1705.02523
8. J.M. Nagy *et al.*, "A New Limit on CMB Circular Polarization from SPIDER", *Astrophys. J.* **844**, 151 (2017); arXiv:1704.00215
9. P.A.R. Ade *et al.*, "BICEP2 / Keck Array VIII: Measurement of gravitational lensing from large-scale B-mode polarization", *Astrophys. J.* **833**, 228 (2016); arXiv:1606.01968
10. P.A.R. Ade *et al.*, "BICEP2 / Keck Array VII: Matrix based E/B Separation applied to BICEP2 and the Keck Array", *Astrophys. J.* **825**, 66 (2016); arXiv:1603.05976
11. P.A.R. Ade *et al.*, "BICEP2 / Keck Array VI: Improved Constraints on Cosmology and Foregrounds from BICEP2 and Keck Array Cosmic Microwave Background Data with Inclusion of 95 GHz Band", *Phys. Rev. Lett.* **116**, 031302 (2016); arXiv:1510.09217
12. S. Bryan *et al.*, "A cryogenic rotation stage with a large clear aperture for a half-wave plate", *Rev. Sci. Instr.* **87**, 014501 (2016); arXiv:1510.01771
13. P.A.R. Ade *et al.*, "BICEP2 III: Instrumental systematics", *Astrophys. J.* **815**, 110 (2015); arXiv:1502.00608
14. P.A.R. Ade *et al.*, "Antenna-coupled TES bolometers used in BICEP2, Keck Array, and SPIDER", *Astrophys. J.* **812**, 176 (2015); arXiv:1502.00619
15. J.E. Gudmundsson *et al.*, "The thermal design, characterization, and performance of the SPIDER long-duration balloon cryostat", *Cryogenics* **72**, 65 (2015); arXiv:1506.06953
16. P.A.R. Ade *et al.*, "BICEP2 / Keck Array V: Measurements of B-mode polarization at degree angular scales and 150 GHz by the Keck Array", *Astrophys. J.* **811**, 126 (2015); arXiv:1502.00643
17. P.A.R. Ade *et al.*, "BICEP2 / Keck Array IV: Optical characterization and performance of the BICEP2 and Keck Array Experiments", *Astrophys. J.* **806**, 206 (2015); arXiv:1502.00596
18. P.A.R. Ade *et al.*, "A joint analysis of BICEP2/Keck Array and Planck data", *Phys. Rev. Lett.* **114**, 101301 (2015); arXiv:1502.00612
19. P.A.R. Ade *et al.*, "BICEP2 II: The BICEP2 experiment and three-year data set", *Astrophys. J.* **792**, 62 (2014); arXiv:1403.4302
20. P.A.R. Ade *et al.*, "BICEP2 I: Detection of B-mode Polarization at Degree Angular Scales by BICEP2", *Phys. Rev. Lett.* **112**, 241101 (2014); arXiv:1403.3985

21. D. Barkats *et al.*, "Degree-scale CMB polarization measurements from three years of BICEP1 data", *Astrophys. J.* **783**, 67 (2014); arXiv:1310.1422
22. R. Agnese *et al.*, "Silicon detector dark matter results from the final exposure of CDMS II", *Phys. Rev. Lett.* **111**, 251301 (2013); arXiv:1304.4279
23. R. Agnese *et al.*, "Silicon detector results from the first five-tower run of CDMS II", *Phys. Rev. D* **88**, 031104(R) (2013); arXiv:1304.3706
24. J.P. Kaufman *et al.*, "Self-calibration of BICEP1 three-year data and constraints on astrophysical polarization rotation", *Phys. Rev. D* **89**, 062006 (2013); arXiv:1312.7877
25. A.A. Fraisse *et al.*, "SPIDER: probing the early universe with a suborbital polarimeter", *JCAP* **04** (2013) 047; arXiv:1106.3087
26. D.T. O'Dea *et al.*, "SPIDER optimization II: Optical, Magnetic and Foreground Effects", *Astrophys. J.* **738**, 63 (2011); arXiv:1102.0559
27. Z. Ahmed *et al.*, "Combined Limits on WIMPs from the CDMS and EDELWEISS Experiments", *Phys. Rev. D* **84**, 011102(R) (2011); arXiv:1105.3377
28. Z. Ahmed *et al.*, "Results from a Low-Energy Analysis of the CDMS II Germanium Data", *Phys. Rev. Lett.* **106**, 131302 (2011); arXiv:1011.2482
29. Z. Ahmed *et al.*, "Search for inelastic dark matter with the CDMS II experiment," *Phys. Rev. D.* **83**, 112002 (2011); arXiv:1012.5078
30. Z. Ahmed *et al.*, "Analysis of the low-energy electron-recoil spectrum of the CDMS Experiment", *Phys. Rev. D* **81**, 042002 (2010); arXiv:0907.1438
31. D.S. Akerib *et al.*, "A low-threshold analysis of CDMS shallow-site data," *Phys. Rev. D* **82**, 122004 (2010); arXiv:1010.4290
32. Z. Ahmed *et al.*, "Dark matter search results from the CDMS II experiment", *Science* **327**, p. 1619 (2010); arXiv:0912.3592
33. Z. Ahmed *et al.*, "Search for Weakly Interacting Massive Particles with the First Five-Tower Data from the Cryogenic Dark Matter Search at the Soudan Underground Laboratory", *Phys. Rev. Lett.* **102**, 011301 (2009); arXiv:0802.3530
34. Z. Ahmed *et al.*, "Search for Axions with the CDMS Experiment", *Phys. Rev. Lett.* **103**, 141802 (2009); arXiv:0902.4693
35. D.S. Akerib *et al.*, "Limits on spin-dependent WIMP-nucleon interactions from the Cryogenic Dark Matter Search", *Phys. Rev. D* **73**, 011102 (2006); astro-ph/0509269
36. D.S. Akerib *et al.*, "Limits on spin-independent WIMP-nucleon interactions from the two-tower run of the Cryogenic Dark Matter Search", *Phys. Rev. Lett.* **95**, 011302 (2006); astro-ph/0509259
37. D.S. Akerib *et al.*, "Exclusion limits on the WIMP-nucleon cross-section from the first run of the Cryogenic Dark Matter Search in the Soudan Underground Lab", *Phys. Rev. D* **72**, 052009 (2005); astro-ph/0507190
38. D.S. Akerib *et al.*, "First Results from the Cryogenic Dark Matter Search in the Soudan Underground Lab", *Phys. Rev. Lett.* **93**, 211301 (2004); astro-ph/0405033

JOURNAL ARTICLES IN REVIEW

1. A.E. Gambrel *et al.*, "The XFAster Power Spectrum and Likelihood Estimator for the Analysis of Cosmic Microwave Background Maps", submitted to *Astrophys. J.*; arXiv:2104.01172
2. P.A.R. Ade *et al.*, "A Constraint on Primordial B-Modes from the First Flight of the SPIDER Balloon-Borne Telescope", submitted to *Astrophys. J.*; arXiv:2103.13334
3. K. Abazajian *et al.*, "CMB-S4: Forecasting Constraints on Primordial Gravitational Waves", submitted to *Astrophys. J.*; arXiv:2008.12619

REFEREED CONFERENCE PROCEEDINGS

1. B. Osherson, J.P. Filippini *et al.*, "Particle response to antenna-coupled TES arrays: results from SPIDER and the lab", *J. Low Temp. Phys.* (LTD-15) **199**, 1127-1136 (2020); arXiv:2002.05771

2. A. Soliman *et al.*, "Design and Characterization of Antenna-Coupled 30/40 GHz Detectors and Modules for the BICEP Array Experiment", *J. Low Temp. Phys.* (LTD-15) **199**, 1118–1126 (2020); arXiv:2002.05254
3. C. Zhang *et al.*, "Characterizing the Sensitivity of 40 GHz TES Bolometers for BICEP Array", *J. Low Temp. Phys.* (LTD-15) **199**, 968–975 (2020), arXiv:2002.05219
4. A. Schillaci *et al.*, "Design and performance of the first BICEP Array receiver", *J. Low Temp. Phys.* (LTD-15) **199**, 976–984 (2020); arXiv:2002.05228
5. T. St. Germaine *et al.*, "Optical characterization of the Keck Array and BICEP3 CMB Polarimeters from 2016 to 2019", *J. Low Temp. Phys.* (LTD-15) **199**, 824–832 (2020); arXiv:2002.05197
6. A. Cukierman *et al.*, "Microwave multiplexing on the Keck Array", *J. Low Temp. Phys.* (LTD-15) **199**, 858–866 (2020); arXiv:1909.01305
7. R. Gualtieri, **J.P. Filippini** *et al.*, "SPIDER: CMB polarimetry from the edge of space", *J. Low Temp. Phys.* (LTD-14) **193**, 1112 (2018); arXiv:1711.10596
8. S. Bergman *et al.*, "280 GHz Focal Plane Unit Design and Characterization for the SPIDER-2 Suborbital Polarimeter", *J. Low Temp. Phys.* (LTD-14) **193**, 1075 (2018), arXiv:1711.04169
9. S. Bryan *et al.*, "Measuring Reionization, Neutrino Mass, and Cosmic Inflation with BFORE", *J. Low Temp. Phys.* (LTD-14) **193**, 1033 (2018); arXiv:1707.01488
10. W.L.K. Wu *et al.*, "Initial performance of BICEP3: a degree angular scale 95 GHz band polarimeter", *J. Low Temp. Phys.* (LTD-13) **184**, 764 (2016); arXiv: 1601.00125
11. C. N. Bailey *et al.*, "Detector Development for the Next Phases of the Cryogenic Dark Matter Search: Results from 1 inch Ge and Si Detectors", *J. Low Temp. Phys.* (LTD-12) **151**, p. 211 (2008)
12. D. S. Akerib *et al.*, "Present status of the SuperCDMS program", *J. Low Temp. Phys.* (LTD-12) **151**, p. 818 (2008)
13. Z. Ahmed *et al.*, "Present status of the Cryogenic Dark Matter Search experiment", *J. Low Temp. Phys.* (LTD-12) **151**, p. 800 (2008)
14. P. L. Brink *et al.*, "The SuperCDMS proposal for dark matter detection", *Nucl. Instr. Meth. A* **559** (LTD-11), p. 411 (2006)
15. **J. Filippini** *et al.*, "Limits on WIMP-nucleon interactions from the Cryogenic Dark Matter Search at the Soudan Underground Laboratory", *Nucl. Instr. Meth. A* **559** (LTD-11), p. 390 (2006)
16. R. W. Ogburn *et al.*, "Characterization, performance, and future advanced analysis of detectors in the Cryogenic Dark Matter Search (CDMS-II)", *Nucl. Instr. Meth. A* **559** (LTD-11), p. 387 (2006)
17. N. Mirabolfathi *et al.*, "Detector commissioning for the CDMS-II final run at the Soudan Underground Laboratory", *Nucl. Instr. Meth. A* **559** (LTD-11), p. 417 (2006)
18. P. L. Brink *et al.*, "First test runs of a dark-matter detector with interleaved ionization electrodes and phonon sensors for surface-event rejection", *Nucl. Instr. Meth. A* **559** (LTD-11), p. 414 (2006)
19. V. Mandic *et al.*, "Study of the dead layer in germanium for the CDMS detectors", *Nucl. Instr. Meth. A* **520** (LTD-10), p. 171 (2003)

CONFERENCE PROCEEDINGS

1. E.C. Shaw *et al.*, "Design and pre-flight performance of SPIDER 280 GHz receivers", *Proc. SPIE* 11453, 114532F (13 December 2020); arXiv:2012.12407
2. J. Vieira *et al.*, "The Terahertz Intensity Mapper (TIM): a Next-Generation Experiment for Galaxy Evolution Studies", Proceedings of the 30th International Symposium on Space THz Technology (ISSTT2019), Gothenburg, Sweden, April 15-17, 2019; arXiv:2009.14340
3. A. Soliman *et al.*, "Design and performance of wide-band corrugated walls for the BICEP Array detector modules at 30/40 GHz", *Proc. SPIE* 10708 (2018); arXiv:1808.00571
4. D. Barkats *et al.*, "Ultra-Thin Large-Aperture Vacuum Windows for Millimeter Wavelengths Receivers", *Proc. SPIE* 10708 (2018); arXiv:1808.00570
5. M. Crumrine *et al.*, "BICEP Array cryostat and mount design", *Proc. SPIE* 10708 (2018); arXiv:1808.00569

6. H. Hui *et al.*, "BICEP Array: a multi-frequency degree-scale CMB polarimeter", *Proc. SPIE* 10708 (2018); arXiv:1808.00568
7. J.H. Kang *et al.*, "2017 upgrade and performance of BICEP3: a 95GHz refracting telescope for degree-scale CMB polarization", *Proc. SPIE* 10708 (2018); arXiv:1808.00567
8. P.A.R. Ade *et al.*, "Measurements of Degree-Scale B-mode Polarization with the BICEP/Keck Experiments at South Pole", 53rd Rencontres de Moriond, Cosmology 2018; arXiv:1807.02199
9. H. Hui *et al.*, "BICEP3 focal plane design and detector performance", to appear in *Proc. SPIE* 9914 (2016); arXiv:1607.06861
10. J.A. Grayson *et al.*, "BICEP3 performance overview and planned Keck Array upgrade", *Proc. SPIE* 9914 (2016); arXiv:1607.04668
11. K.S. Karkare *et al.*, "Optical Characterization of the BICEP3 CMB Polarimeter at the South Pole", *Proc. SPIE* 9914 (2016); arXiv:1607.04567
12. J. Hubmayr *et al.*, "Design of 280 GHz feedhorn-coupled TES arrays for the balloon-borne polarimeter SPIDER", *Proc. SPIE* 9914 (2016); arXiv:1606.09396
13. S.J. Benton *et al.*, "BLASTbus electronics: general-purpose readout and control for balloon-borne experiments", *Proc. SPIE* 9145 (2014); arXiv:1407.1882
14. N.N. Gandilo *et al.*, "Attitude determination for balloon-borne experiments", *Proc. SPIE* 9145 (2014); arXiv:1407.1883
15. J.A. Shariff *et al.*, "Pointing control for the SPIDER balloon-borne telescope", *Proc. SPIE* 9145 (2014); arXiv:1407.1880
16. J.D. Soler *et al.*, "Design and construction of a carbon fiber gondola for the SPIDER balloon-borne telescope", *Proc. SPIE* 9145 (2014); arXiv:1407.1881
17. Z. Ahmed *et al.*, "BICEP3: a 95 GHz refracting telescope for degree-scale CMB polarization", *Proc. SPIE* 9153 (2014); arXiv:1407.5928
18. I. Buder *et al.*, "BICEP2 and Keck Array: upgrades and improved beam characterization", *Proc. SPIE* 9153 (2014)
19. K.S. Karkare *et al.*, "Keck Array and BICEP3: spectral characterization of 5000+ detectors", *Proc. SPIE* 9153 (2014)
20. A.S. Rahlin *et al.*, "Pre-flight integration and characterization of the SPIDER balloon-borne telescope", *Proc. SPIE* 9153 (2014); arXiv:1407.2906
21. R. O'Brient *et al.*, "Antenna-coupled TES bolometers for the Keck Array, SPIDER, and Polar-1", *Proc. SPIE* 8452 (2012); arXiv:1208.1247
22. S. Kernasovskiy *et al.*, "Optimization and sensitivity of the Keck Array", *Proc. SPIE* 8452 (2012)
23. R.W. Ogburn *et al.*, "BICEP2 and Keck Array operational overview and status of observations", *Proc. SPIE* 8452 (2012); arXiv:1208.0857
24. A.G. Vieregg *et al.*, "Optical characterization of the Keck Array polarimeter at the South Pole", *Proc. SPIE* 8452 (2012); arXiv:1208.0844
25. S.A. Bryan *et al.*, "Modeling and characterization of the SPIDER half-wave plate", *Proc. SPIE* 7741, 77412B (2010); arXiv:1006.3874
26. J.E. Gudmundsson *et al.*, "Thermal architecture for the SPIDER flight cryostat", *Proc. SPIE* 7741, 77411M (2010); arXiv:1106.2507
27. **J.P. Filippini** *et al.*, "SPIDER: a balloon-borne CMB polarimeter for large angular scales", *Proc. SPIE* 7741, 77411N (2010); arXiv:1106.2158
28. M.C. Runyan *et al.*, "Design and performance of the SPIDER instrument", *Proc. SPIE* 7741, 77411O (2010); arXiv:1106.2173
29. R.W. Ogburn *et al.*, "The BICEP2 CMB polarization experiment", *Proc. SPIE* 7741, 77411G (2010)
30. R.W. Aikin *et al.*, "Optical performance of the BICEP2 telescope at the South Pole", *Proc. SPIE* 7741, 77410V (2010)
31. J.A. Brevik *et al.*, "Initial performance of the BICEP2 antenna-coupled superconducting bolometers at the South Pole", *Proc. SPIE* 7741, 77411H (2010)

32. A. Orlando *et al.*, "Antenna-coupled TES bolometer arrays for BICEP2/Keck and Spider", *Proc. SPIE* 7741, 77410H (2010); arXiv:1009.3685
33. C.D. Sheehy *et al.*, "The Keck array: a pulse-tube-cooled CMB polarimeter", *Proc. SPIE* 7741, 77411R (2010)
34. **J. Filippini**, "WIMP hunting with the Cryogenic Dark Matter Search", Les Rencontres de Physique de la Vallée D'Aoste, *Nuovo Cimento C* **32** 05-06, p. 45 (2009)
35. A. Orlando *et al.*, "Antenna-Coupled TES Arrays for the BICEP2/Keck and SPIDER Polarimeters", *AIP Conf. Proc.* **1185** (LTD-13), p. 471 (2009)
36. D.N. Seitz *et al.*, "SuperCDMS Detector Readout Cryogenic Hardware", *AIP Conf. Proc.* **1185** (LTD-13), p. 282 (2009)
37. N. Mirabolfathi *et al.*, "The Cryogenic Dark Matter Search (CDMS) Experiment: Results, Status, and Perspective", *AIP Conf. Proc.* **1185** (LTD-13), p. 623 (2009)
38. C.N. Bailey *et al.*, "Bulk and Surface Charge Collection: CDMS Detector Performance and Design Implications", *AIP Conf. Proc.* **1185** (LTD-13), p. 643 (2009)
39. P.L. Brink *et al.*, "SuperCDMS Detector Fabrication Advances", *AIP Conf. Proc.* **1185** (LTD-13), p. 655 (2009)
40. Z. Ahmed *et al.*, "Characterization of SuperCDMS 1-inch Ge Detectors", *AIP Conf. Proc.* **1185** (LTD-13), p. 659 (2009)
41. D.S. Akerib *et al.*, "CDMS, supersymmetry and extra dimensions", 7th UCLA Dark Matter Symposium (DM06), *Nucl Phys. B (Proc. Suppl.)* **173**, p. 95 (2007)
42. P. L. Brink *et al.*, "Latest results from the CDMS II cold dark matter search", *AIP Conf. Proc.* **850** (LT-24), p. 1617 (2006)
43. **J. Filippini** *et al.*, "Limits on Spin-Dependent WIMP-Nucleon Interactions from the Cryogenic Dark Matter Search", 22nd Texas Symposium on Relativistic Astrophysics (2005)
44. R. W. Ogburn *et al.*, "Progress of CDMS-II at the Soudan Mine", 22nd Texas Symposium on Relativistic Astrophysics (2005)
45. P. L. Brink *et al.*, "Beyond the CDMS-II Dark Matter Search: SuperCDMS", 22nd Texas Symposium on Relativistic Astrophysics (2005)
46. R. W. Schnee *et al.*, "The SuperCDMS experiment", 5th International Heidelberg Conference on Dark Matter in Astro and Particle Physics (DARK04) (2004)

COMMUNITY WHITE PAPERS AND REPORTS

1. S. Hanany *et al.*, "PICO: Probe of Inflation and Cosmic Origins", Astro2020 APC White Paper, arXiv:1908.07495
2. K. Abazajian *et al.*, "CMB-S4 Decadal Survey APC White Paper", Astro2020 APC White Paper, arXiv:1908.01062
3. K. Abazajian *et al.*, "CMB-S4 Science Case, Reference Design, and Project Plan", arXiv:1907.04473
4. S. Hanany *et al.*, "PICO: Probe of Inflation and Cosmic Origins", NASA Probe-class mission study, arXiv:1902.10541
5. K. Abazajian *et al.*, "CMB-S4 Science Book, First Edition", arXiv:1610.02743
6. M.H. Abitbol *et al.*, "CMB-S4 Technology Book, First Edition", arXiv:1706.02464

INVITED PRESENTATIONS

INVITED TALKS AT CONFERENCES AND WORKSHOPS

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|---|------------------|
| 1. APS April Meeting Inflation Probe SIG (<i>virtual</i>) | <i>Apr. 2021</i> |
| 2. CMB systematics and calibration focus workshop, Kavli IPMU, Japan (<i>virtual</i>) | <i>Dec. 2020</i> |
| 3. B-Mode from Space 2019, Max Planck Institute for Astrophysics, Garching, Germany | <i>Dec. 2019</i> |
| 4. B-Mode from Space 2017, University of California, Berkeley, CA | <i>Dec. 2017</i> |
| 5. Aspen Winter Conference: From the LHC to Dark Matter and Beyond, Aspen, CO | <i>Mar. 2017</i> |

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| 6. 28 th Rencontres de Blois, Blois, France | May 2016 |
| 7. Physics of the Universe Summit, New York University, NY | Sep. 2014 |
| 8. 26 th Rencontres de Blois, Blois, France | May 2014 |
| 9. Burke Institute Workshop on Primordial Gravitational Waves and Cosmology, Caltech | May 2014 |
| 10. 23 rd Rencontres de Physique de la Valee D'Aoste, La Thuile, Italy | Mar. 2009 |

COLLOQUIA

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|---|-----------|
| 1. Astrophysics colloquium, Goddard Space Flight Center (<i>virtual, postponed from 2020</i>) | Apr. 2021 |
| 2. Physics colloquium, University of Illinois, Urbana-Champaign, IL | Feb. 2018 |
| 3. Astronomy colloquium, University of Toronto, Canada | Apr. 2015 |
| 4. Physics colloquium, Harvey Mudd College, Claremont, CA | Oct. 2014 |
| 5. Astronomy colloquium, Princeton University, Princeton, NJ | Apr. 2014 |

INVITED SEMINARS

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| 1. Astronomy seminar, University of Chicago, IL (<i>virtual</i>) | May. 2021 |
| 2. Observational cosmology seminar, Caltech, Pasadena, CA (<i>virtual</i>) | Apr. 2021 |
| 3. Cosmology journal club talk, Harvard University, Cambridge, MA (<i>virtual</i>) | Apr. 2021 |
| 4. Astrophysics seminar, University of Pennsylvania, Philadelphia, PA (<i>virtual</i>) | Mar. 2021 |
| 5. Gravity group seminar, Princeton University, Princeton, NJ | Nov. 2018 |
| 6. Observational cosmology seminar, Caltech, Pasadena, CA | Oct. 2018 |
| 7. HEP division seminar, Argonne National Lab, Lemont, IL | Nov. 2016 |
| 8. KICP seminar, University of Chicago, IL | Oct. 2016 |
| 9. Astrophysics seminar, Fermi National Lab, Batavia, IL | Jun. 2015 |
| 10. Astrophysics / cosmology seminar, Southern Methodist University, Dallas, TX (<i>virtual</i>) | Sep. 2014 |
| 11. Cosmology / gravitation seminar, APC Paris, France | May 2014 |
| 12. HEP / MEP seminar, University of Illinois, Urbana-Champaign, IL | Mar. 2014 |
| 13. Research progress meeting, Lawrence Berkeley National Lab, Berkeley, CA | Jan. 2014 |
| Cosmology seminar, University of California, Berkeley, CA | |
| 14. Physics seminar, Rensselaer Polytechnic Institute, Troy, NY | Nov. 2013 |
| 15. Stanford / SLAC cosmology seminar, Stanford University, Stanford, CA | Oct. 2013 |
| 16. Research progress meeting, Lawrence Berkeley National Lab, Berkeley, CA | Mar. 2013 |
| Cosmology seminar, University of California, Berkeley, CA | |
| 17. Cosmology seminar, University of California, Berkeley, CA | Feb. 2011 |
| 18. Physics seminar, Princeton University, Princeton, NJ | Feb. 2008 |
| 19. Particle and nuclear astrophysics seminar, Princeton University, Princeton, NJ | Dec. 2007 |
| 20. INPA seminar, Lawrence Berkeley National Lab, Berkeley, CA | Sep. 2005 |

REVIEW PANELS

Dates suppressed for confidentiality

NSF Astronomy: Advanced Technologies and Instrumentation (ATI)
 DOE High-Energy Physics: Small Business Innovation Research / Small Business Technology Transfer (SBIR / STTR)
 DOE Office of Science: Graduate Student Research Program (SCGR)
 NASA Space Technology Graduate Research Opportunities (NSTGRO)

TEACHING

** indicates ranked as 'excellent' by students*

UNIVERSITY OF ILLINOIS, URBANA-CHAMPAIGN

Physics 401: Classical Physics Laboratory

Upper-level undergraduate course on laboratory techniques and scientific writing
Spring 2021, Fall 2020, Spring 2020*

Physics 213: Thermal Physics & Physics 214: Quantum Physics

Introductory undergraduate courses for scientists and engineers (split half-semester)

Fall 2019 (lab coordinator), Spring 2018* (lab coordinator), Spring 2016* (discussion coordinator)*

Member of major course redesign working group, supported by UIUC SIIP grant 2018–2019

Physics 211: Mechanics

Introductory undergraduate course for scientists and engineers

Spring 2019 (lab coordinator), Spring 2015 (discussion coordinator)*

Physics 150: Physics for Future Leaders

Undergraduate liberal arts course connecting physics, news, and public policy

Fall 2017, Spring 2017, Fall 2016

UNIVERSITY OF CALIFORNIA, BERKELEY

Physics 10: Physics for Future Presidents

Undergraduate liberal arts course connecting physics, news, and public policy

Fall 2002 (teaching assistant)

HARVARD UNIVERSITY

Physics 15b: Electricity & Magnetism

Introductory undergraduate course for scientists

Spring 2002 (lab teaching assistant)*

RESEARCH MENTORING

POSTDOCTORAL SCHOLARS

Dr. Riccardo Gualtieri, 2015–2020 → Argonne National Lab

GRADUATE STUDENTS

Carina Baker, PhD expected 2024

Amber Lennox, PhD expected 2023

Rong Nie, PhD expected 2022

Elle Shaw, PhD expected 2022

Benjamin Osherson, PhD expected 2021

Rebecca Tucker (co-supervised), PhD Caltech 2014 → Data scientist, Netflix

UNDERGRADUATE STUDENTS

Cecilia Abbamonte, 2021

Ahmed Imran, 2019–2020 (*Ralph O. Simmons award*)

Hilary Utaegbulam, REU 2019, U. of Houston → Ph.D. student, Syracuse U.

Kalirae Pappas, 2017–2018 → Ph.D. student, MIT

Cyrus Liu, 2018

Hannah Messenger, REU 2018, CWRU → New England Conservatory of Music

Charmi Patel, 2018 → Ph.D. student, U. Mass Lowell

Bryan Hendricks, REU 2017, Illinois Inst. of Tech. → Ph.D. student, Penn State

Jiayang Fu, 2016–2017 → Ph.D. student, UIUC

Robert Gramillano, 2016–2018 → Data scientist, IRI

Alex Navarre, 2016–2017 → Ph.D. student, U. Cincinnati

Derek Glennon, 2016 → FX Technical Artist, Neal Analytics

Aaron Smothers, 2016

Emma Western, REU 2016, U. of St. Thomas → Ph.D. student, Louisiana State

Lunan Sun, 2015 → Ph.D. student, UIUC

Harshil Kamdar, 2015 → Ph.D. student, Harvard
Maxwell De Jong, SURF 2012, Caltech → Ph.D. student, U. Michigan

PUBLIC ENGAGEMENT AND OUTREACH

| | |
|--|---------------------|
| Astronomy on Tap – Champaign-Urbana | 2015 – Present |
| Founding member of advisory board (<i>w/ J. Vieira, F. Menanteau</i>), frequent host | |
| Astronomy on Tap: “Science on a String: Balloon-Borne Astronomy” (<i>virtual</i>) | May 20, 2021 |
| Astronomy on Tap at Pygmalion: “Dark Matter” | Sep. 22, 2017 |
| Astronomy at the Champaign Library: “Stars” | Oct. 15, 2016 |
| Astronomy on Tap: “Dark Matter” | Jun. 16, 2016 |
| Interviewed for WCIA3 TV (with J. Vieira) | aired Apr. 18, 2016 |
| Art-Science Festival @ Illinois 2021: The Illuminated Universe | Apr. 23, 2021 |
| Presenter (<i>virtual</i>): “SPIDER to the Stratosphere” | |
| Whys Guys Wednesdays – WCIA TV | |
| Presenter of brief science segments (<i>15 shows</i>) | 2017–2019 |
| James B. Kaler Public Lecture – Staerkel Planetarium | Nov. 2, 2018 |
| Presenter: “The Dark Universe” | |
| Dark Matter Day at UIUC | |
| Organizer and contributor to U of I educational video | Oct. 31, 2017 |
| Organizer, host, and panelist for film screening event | Oct. 24, 2017 |
| Saturday Physics for Everyone – University of Illinois | |
| Presenter: “The Hidden Universe: Dark Matter and Dark Energy” | Nov. 5, 2016 |
| SPIDER Press | |
| Interviewed for "SPIDER Experiment Touches Down in Antarctica" | Jan. 21, 2015 |
| K. Fesenmaier, <i>Caltech News</i> and <i>JPL News</i> | |
| Interviewed for "Big Questions Somewhat Answered" | Jan. 19, 2015 |
| S. Shostak, <i>Big Picture Science</i> radio show and podcast | |
| Interviewed for "A High-Flying Web May Catch the Beginning of Time" | Nov. 12, 2014 |
| D. Falk, <i>Scientific American</i> | |
| California Science Center | Nov. 2012 |
| Hands-on presentations about dark matter and infrared astronomy to general public and school groups as part of 6-day NASA open house at opening of space shuttle <i>Endeavour</i> exhibit. | |
| CDMS Press | |
| Interviewed for "Cosmology: The Hunting of the Dark" | Mar. 23, 2011 |
| A. Mann, <i>Nature</i> 471 , 433-435 (2011) | |
| CDMS Education and Outreach | 2003-2008 |
| Led lab tours at UC Berkeley and Soudan Underground Laboratory. | |
| Redesigned and maintained CDMS's education and outreach web site, including new essays on the science of dark matter and answers to questions from the public. | |
| Several outreach activities at the Level Playing Field Institute's Summer Math and Science Honors (SMASH) Academy and at Emeryville High School. | |

SERVICE TO THE RESEARCH COMMUNITY

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|---|----------------|
| Governing board (<i>elected</i>), CMB-S4 collaboration | 2020–2022 |
| Interim L3 lead; readout scientist leadership team, CMB-S4 project | 2020–Present |
| Membership committee, CMB-S4 collaboration | 2018–2020 |
| Inaugural South Pole Observatory workshop and BICEP/SPT meeting, Urbana, IL | Oct. 2-4, 2019 |
| <i>Local organizing committee</i> | |
| HAWC+ (SOFIA camera) technical review panelist, JPL, Pasadena, CA | 2013–2014 |

| | |
|---|-------------------------|
| 15 th International Workshop on Low Temperature Detectors, Pasadena, CA <i>Local organizing committee</i> | <i>Jun. 24-28, 2013</i> |
| Maintainer of dark matter community limit plotter (dmtools.berkeley.edu) | <i>2003–2009</i> |
| Univ. of California INPAC meeting, Berkeley, CA <i>Scientific secretary / webmaster</i> | <i>May 4-6, 2007</i> |
| Pre-SUSY06 Dark Matter Complementarity Workshop, Irvine, CA <i>Organizing committee / webmaster</i> | <i>June 10, 2006</i> |
| DUSEL Science Workshop, Berkeley, CA <i>Scientific secretary</i> | <i>Aug. 11-14, 2006</i> |
| Referee: <i>Physical Review Letters, Physical Review D, Astrophysical Journal, Journal of Low Temperature Physics, Review of Scientific Instruments, Journal of Applied Physics</i> | |

SERVICE TO THE UNIVERSITY COMMUNITY

| | |
|--|-----------------------------|
| Organizer, Astrophysics, Gravitation, and Cosmology seminar | <i>2020–2021; 2015–2017</i> |
| Graduate Admissions Committee | <i>2020–2021</i> |
| Helium Liquefier Strategic Planning Committee (<i>member 2019, chair 2020</i>) | <i>2019–Present</i> |
| Advisor, Society of Physics Students (SPS) | <i>2017–Present</i> |
| Undergraduate Studies Committee | <i>2018–2020; 2016–2017</i> |
| Graduate Qualifying Examination Committee | <i>2019</i> |
| Speaker (<i>w/ J. Shelton</i>), 1 st Annual Curie-Meitner Celebration | <i>Nov. 7, 2019</i> |
| Physics Faculty Advisory Committee | <i>2017–2019</i> |
| ARISE program mentor (<i>academic redshirt program for low-income students</i>) | <i>2017–2019</i> |
| Physics Department Head Search Committee | <i>2018</i> |
| Physics / Astronomy Convocation faculty speaker | <i>2018</i> |
| Berkeley Physics Graduate Student / Faculty Liaison Committee | <i>2003–2004</i> |