

Theodore Kisner

Curriculum Vitæ

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Those who do not understand UNIX are condemned to reinvent it, poorly. –Henry Spencer, Usenet, 1987.

Projects and Experience

- July 2006 – Present **Cosmic Microwave Background Analysis**, *LBNL and Space Science Lab*, Berkeley, CA.
Lead developer of the [Time Ordered Astrophysics Scalable Tools](#) (TOAST) software package for simulation and analysis of CMB data from a variety of telescopes. Member of the Planck, PolarBear, and EBEX science teams.
- August 2011 – Present **Spectral Extraction**, *LBNL*, Berkeley, CA.
Worked on algorithms and parallel software tools for maximum likelihood spectral extraction in the context of multi-fiber spectrographs used for instruments such as BOSS and DESI.
- May 2009 – Present **Machine Optimized Math Tools**, *LBNL and Space Science Lab*, Berkeley, CA.
Lead developer of the [Machine Optimized Analysis Tools](#) (MOAT) software package, which provides a portability layer around common math operations needed for Cosmology. Various vendor math libraries are used on the backend to accelerate these operations for any particular machine.
- July 2006 – Present **System Tools for HPC**, *LBNL and Space Science Lab*, Berkeley, CA.
Unified the management, building and installation of many disparate software packages used for Cosmology research. Created the [HPCPorts](#) package management system which enables the compilation and deployment of consistent software builds across machines at [NERSC](#) and other supercomputer centers.
- June 2000 – March 2008 **BOOMERanG Telescope**, *UCSB, CWRU, and Space Science Lab*.
Assisted in the construction and characterization of the polarization sensitive receiver used in the 2003 flight of BOOMERanG. Developed a set software tools used for the cleaning and postprocessing of the detector timestreams. Wrote serial and parallel codes to facilitate the CMB power spectral analyses of simulated and real data using existing parallel software (MADCAP).
- January 2003 – July 2008 **HPIC Software Suite**, *Personal Project*.
Primary developer for the HPIC implementation of the HEALPix algorithm for pixelizing the sphere.
- January 2002 – March 2008 **System Administrator**, *UCSB and CWRU*.
Responsible for installation and maintenance of GNU/Linux computers used as both servers and workstations. Configured a variety of services including web, email, mailing lists, NFS, and MPI. Created custom scripts for performing various system-level tasks, including networked backups to a tape library.

Education

- March 2008 **Doctor of Philosophy in Physics**, *University of California*, Santa Barbara, CA.
- March 2002 **Masters of Science in Physics**, *University of California*, Santa Barbara, CA.
- June 1998 **Bachelors of Science with Honors in Physics**, *Pennsylvania State University*, State College, PA.

Awards and Recognition

- September 2012 **LBNL Spot Award**, Berkeley, CA.
"For developing tools able to process data from the Planck telescope."
- June 2011 **NASA Group Achievement Award**, *Given to the Planck Data Analysis and Operations Support Team*, Washington, DC.
"For successfully achieving the Planck minimum mission."
- May 2010 **NASA Public Service Group Achievement Award**, *Given to the Planck Supercomputing Infrastructure Team*, Washington, DC.
"For outstanding achievement in developing the supercomputing infrastructure for the U.S. Planck team."

May 2010 **NASA Group Achievement Award**, Given to the Planck Data Analysis Pipeline Development Team, Washington, DC.

"For outstanding participation as a partner with European Colleagues in conceiving and implementing the overall data analysis strategy for the Planck mission."

Publications and Talks

Planck Collaboration. Planck intermediate results. XVII. Emission of dust in the diffuse interstellar medium from the far-infrared to microwave frequencies. *ArXiv e-prints*, December 2013.

Planck Collaboration. Planck 2013 results. XXXI. All-sky model of thermal dust emission. *ArXiv e-prints*, December 2013.

Planck Collaboration. Planck intermediate results. XVI. Profile likelihoods for cosmological parameters. *ArXiv e-prints*, November 2013.

Planck Collaboration. Planck 2013 results. XXX. Cosmic infrared background measurements and implications for star formation. *ArXiv e-prints*, September 2013.

Planck Collaboration. Planck intermediate results. XIV. Dust emission at millimetre wavelengths in the Galactic plane. *ArXiv e-prints*, July 2013.

Planck Collaboration. Planck intermediate results. XIII. Constraints on peculiar velocities. *ArXiv e-prints*, March 2013.

Planck Collaboration. Planck 2013 results. XXIX. Planck catalogue of Sunyaev-Zeldovich sources. *ArXiv e-prints*, March 2013.

Planck Collaboration. Planck 2013 results. XXVIII. The Planck Catalogue of Compact Sources. *ArXiv e-prints*, March 2013.

Planck Collaboration. Planck 2013 results. XXVII. Doppler boosting of the CMB. *ArXiv e-prints*, March 2013.

Planck Collaboration. Planck 2013 results. XXVI. Background geometry and topology of the Universe. *ArXiv e-prints*, March 2013.

Planck Collaboration. Planck 2013 results. XXV. Searches for cosmic strings and other topological defects. *ArXiv e-prints*, March 2013.

Planck Collaboration. Planck 2013 Results. XXIV. Constraints on primordial non-Gaussianity. *ArXiv e-prints*, March 2013.

Planck Collaboration. Planck 2013 results. XXIII. Isotropy and Statistics of the CMB. *ArXiv e-prints*, March 2013.

Planck Collaboration. Planck 2013 results. XXII. Constraints on inflation. *ArXiv e-prints*, March 2013.

Planck Collaboration. Planck 2013 results. XXI. Cosmology with the all-sky Planck Compton parameter τ -map. *ArXiv e-prints*, March 2013.

Planck Collaboration. Planck 2013 results. XX. Cosmology from Sunyaev-Zeldovich cluster counts. *ArXiv e-prints*, March 2013.

Planck Collaboration. Planck 2013 results. XIX. The integrated Sachs-Wolfe effect. *ArXiv e-prints*, March 2013.

Planck Collaboration. Planck 2013 results. XVIII. Gravitational lensing-infrared background correlation. *ArXiv e-prints*, March 2013.

Planck Collaboration. Planck 2013 results. XVII. Gravitational lensing by large-scale structure. *ArXiv e-prints*, March 2013.

Planck Collaboration. Planck 2013 results. XVI. Cosmological parameters. *ArXiv e-prints*, March 2013.

Planck collaboration. Planck 2013 results. XV. CMB power spectra and likelihood. *ArXiv e-prints*, March 2013.

Planck Collaboration. Planck 2013 results. XIV. Zodiacal emission. *ArXiv e-prints*, March 2013.

Planck Collaboration. Planck 2013 results. XIII. Galactic CO emission. *ArXiv e-prints*, March 2013.

Planck Collaboration. Planck 2013 results. XII. Component separation. *ArXiv e-prints*, March 2013.

Planck Collaboration. Planck 2013 results X. Energetic particle effects: characterization, removal, and simulation. *ArXiv e-prints*, March 2013.

- Planck Collaboration. Planck 2013 results. IX. HFI spectral response. *ArXiv e-prints*, March 2013.
- Planck Collaboration. Planck 2013 results. VIII. HFI photometric calibration and mapmaking. *ArXiv e-prints*, March 2013.
- Planck Collaboration. Planck 2013 results. VII. HFI time response and beams. *ArXiv e-prints*, March 2013.
- Planck Collaboration. Planck 2013 results. VI. High Frequency Instrument data processing. *ArXiv e-prints*, March 2013.
- Planck Collaboration. Planck 2013 results. V. LFI calibration. *ArXiv e-prints*, March 2013.
- Planck Collaboration. Planck 2013 results. IV. Low Frequency Instrument beams and window functions. *ArXiv e-prints*, March 2013.
- Planck Collaboration. Planck 2013 results. III. LFI systematic uncertainties. *ArXiv e-prints*, March 2013.
- Planck Collaboration. Planck 2013 results. II. The Low Frequency Instrument data processing. *ArXiv e-prints*, March 2013.
- Planck Collaboration. Planck 2013 results. I. Overview of products and scientific results. *ArXiv e-prints*, March 2013.
- T. Kisner. **MADmap and TOAST for PACS**. Talk at Herschel Map-making Conference 2013 (ESOC, Madrid), 2013.
- Planck Collaboration. Planck intermediate results. XII: Diffuse Galactic components in the Gould Belt System. *ArXiv e-prints*, January 2013.
- Planck Collaboration. Planck Intermediate Results. XI: The gas content of dark matter halos: the Sunyaev-Zeldovich-stellar mass relation for locally brightest galaxies. *ArXiv e-prints*, December 2012.
- K. Arnold, P. A. R. Ade, A. E. Anthony, D. Barron, D. Boettger, J. Borrill, S. Chapman, Y. Chinone, M. A. Dobbs, J. Errard, G. Fabbian, D. Flanigan, G. Fuller, A. Ghribi, W. Grainger, N. Halverson, M. Hasegawa, K. Hattori, M. Hazumi, W. L. Holzapfel, J. Howard, P. Hyland, A. Jaffe, B. Keating, Z. Kermish, T. Kisner, M. Le Jeune, A. T. Lee, E. Linder, M. Lungu, F. Matsuda, T. Matsumura, N. J. Miller, X. Meng, H. Morii, S. Moyerman, M. J. Myers, H. Nishino, H. Paar, E. Quealy, C. Reichardt, P. L. Richards, C. Ross, A. Shimizu, C. Shimmin, M. Shimon, M. Sholl, P. Siritanasak, H. Spieler, N. Stebor, B. Steinbach, R. Stompor, A. Suzuki, T. Tomaru, C. Tucker, and O. Zahn. The bolometric focal plane array of the POLARBEAR CMB experiment. In *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, volume 8452 of *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, September 2012.
- Z. D. Kermish, P. Ade, A. Anthony, K. Arnold, D. Barron, D. Boettger, J. Borrill, S. Chapman, Y. Chinone, M. A. Dobbs, J. Errard, G. Fabbian, D. Flanigan, G. Fuller, A. Ghribi, W. Grainger, N. Halverson, M. Hasegawa, K. Hattori, M. Hazumi, W. L. Holzapfel, J. Howard, P. Hyland, A. Jaffe, B. Keating, T. Kisner, A. T. Lee, M. Le Jeune, E. Linder, M. Lungu, F. Matsuda, T. Matsumura, X. Meng, N. J. Miller, H. Morii, S. Moyerman, M. J. Myers, H. Nishino, H. Paar, E. Quealy, C. L. Reichardt, P. L. Richards, C. Ross, A. Shimizu, M. Shimon, C. Shimmin, M. Sholl, P. Siritanasak, H. Spieler, N. Stebor, B. Steinbach, R. Stompor, A. Suzuki, T. Tomaru, C. Tucker, and O. Zahn. The POLARBEAR experiment. In *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, volume 8452 of *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, September 2012.
- Planck Collaboration. Planck intermediate results. VIII. Filaments between interacting clusters. *A&A*, 550:A134, February 2013.
- Planck Collaboration. Planck intermediate results. VII. Statistical properties of infrared and radio extragalactic sources from the Planck Early Release Compact Source Catalogue at frequencies between 100 and 857 GHz. *A&A*, 550:A133, February 2013.
- Planck Collaboration. Planck intermediate results. V. Pressure profiles of galaxy clusters from the Sunyaev-Zeldovich effect. *A&A*, 550:A131, February 2013.
- Planck Collaboration. Planck intermediate results. VI. The dynamical structure of PLCKG214.6+37.0, a Planck discovered triple system of galaxy clusters. *A&A*, 550:A132, February 2013.
- Planck Collaboration. Planck intermediate results. I. Further validation of new Planck clusters with XMM-Newton. *A&A*, 543:A102, July 2012.
- B. Keating, S. Moyerman, D. Boettger, J. Edwards, G. Fuller, F. Matsuda, N. Miller, H. Paar, G. Rebeiz, I. Schanning, M. Shimon, N. Stebor, K. Arnold, D. Flanigan, W. Holzapfel, J. Howard, Z. Kermish, A. Lee, M. Lungu, M. Myers, H. Nishino, R. O'Brient, E. Quealy, C. Reichardt, P. Richards, C. Shimmin, B. Steinbach, A. Suzuki, O. Zahn, J. Borrill, C. Cantalupo, E. Kisner, E. Linder, M. Sholl, H. Spieler, A. Anthony,

- N. Halverson, J. Errard, G. Fabbian, M. Le Jeune, R. Stompor, A. Jaffe, D. O'Dea, Y. Chinone, M. Hasegawa, M. Hazumi, T. Matsumura, H. Morii, A. Shimizu, T. Tomaru, P. Hyland, M. Dobbs, P. Ade, W. Grainger, and C. Tucker. Ultra High Energy Cosmology with POLARBEAR. *ArXiv e-prints*, October 2011.
- Planck Collaboration. Planck early results. XXVI. Detection with Planck and confirmation by XMM-Newton of PLCK G266.6-27.3, an exceptionally X-ray luminous and massive galaxy cluster at $z \sim 1$. *A&A*, 536:A26, December 2011.
- Planck Collaboration. Planck early results. XV. Spectral energy distributions and radio continuum spectra of northern extragalactic radio sources. *A&A*, 536:A15, December 2011.
- Planck Collaboration. Planck early results. XVII. Origin of the submillimetre excess dust emission in the Magellanic Clouds. *A&A*, 536:A17, December 2011.
- Planck Collaboration. Planck early results. XVI. The Planck view of nearby galaxies. *A&A*, 536:A16, December 2011.
- Planck Collaboration. Planck early results. XIII. Statistical properties of extragalactic radio sources in the Planck Early Release Compact Source Catalogue. *A&A*, 536:A13, December 2011.
- Planck Collaboration. Planck early results. X. Statistical analysis of Sunyaev-Zeldovich scaling relations for X-ray galaxy clusters. *A&A*, 536:A10, December 2011.
- Planck Collaboration. Planck early results. VII. The Early Release Compact Source Catalogue. *A&A*, 536:A7, December 2011.
- A. Zacchei, D. Maino, C. Baccigalupi, M. Bersanelli, A. Bonaldi, L. Bonavera, C. Burigana, R. C. Butler, F. Cuttaia, G. de Zotti, J. Dick, M. Frailis, S. Galeotta, J. González-Nuevo, K. M. Górski, A. Gregorio, E. Keihänen, R. Keskitalo, J. Knoche, H. Kurki-Suonio, C. R. Lawrence, S. Leach, J. P. Leahy, M. López-Caniego, N. Mandolesi, M. Maris, F. Matthai, P. R. Meinhold, A. Mennella, G. Morgante, N. Morisset, P. Natoli, F. Pasian, F. Perrotta, G. Polenta, T. Poutanen, M. Reinecke, S. Ricciardi, R. Rohlfs, M. Sandri, A.-S. Suur-Uski, J. A. Tauber, D. Tavagnacco, L. Terenzi, M. Tomasi, J. Valiviita, F. Villa, A. Zonca, A. J. Banday, R. B. Barreiro, J. G. Bartlett, N. Bartolo, L. Bedini, K. Bennett, P. Binko, J. Borrill, F. R. Bouchet, M. Bremer, P. Cabella, B. Cappellini, X. Chen, L. Colombo, M. Cruz, A. Curto, L. Danese, R. D. Davies, R. J. Davis, G. de Gasperis, A. de Rosa, G. de Troia, C. Dickinson, J. M. Diego, S. Donzelli, U. Dörl, G. Efstathiou, T. A. Enßlin, H. K. Eriksen, M. C. Falvella, F. Finelli, E. Franceschi, T. C. Gaier, F. Gasparo, R. T. Génova-Santos, G. Giardino, F. Gómez, A. Gruppuso, F. K. Hansen, R. Hell, D. Herranz, W. Hovest, M. Huynh, J. Jewell, M. Juvela, T. S. Kisner, L. Knox, A. Lähteenmäki, J.-M. Lamarre, R. Leonardi, J. León-Tavares, P. B. Lilje, P. M. Lubin, G. Maggio, D. Marinucci, E. Martínez-González, M. Massardi, S. Matarrese, M. T. Meharga, A. Melchiorri, M. Migliaccio, S. Mitra, A. Moss, H. U. Nørgaard-Nielsen, L. Pagano, R. Paladini, D. Paoletti, B. Partridge, D. Pearson, V. Pettorino, D. Pietrobon, G. Prézeau, P. Procopio, J.-L. Puget, C. Quercellini, J. P. Rachen, R. Rebolo, G. Robbers, G. Rocha, J. A. Rubiño-Martín, E. Salerno, M. Savelainen, D. Scott, M. D. Seiffert, J. I. Silk, G. F. Smoot, J. Sternberg, F. Stivoli, R. Stompor, G. Tofani, L. Toffolatti, J. Tuovinen, M. Türlér, G. Umana, P. Vielva, N. Vittorio, C. Vuerli, L. A. Wade, R. Watson, S. D. M. White, and A. Wilkinson. Planck early results. V. The Low Frequency Instrument data processing. *A&A*, 536:A5, December 2011.
- A. Mennella, R. C. Butler, A. Curto, F. Cuttaia, R. J. Davis, J. Dick, M. Frailis, S. Galeotta, A. Gregorio, H. Kurki-Suonio, C. R. Lawrence, S. Leach, J. P. Leahy, S. Lowe, D. Maino, N. Mandolesi, M. Maris, E. Martínez-González, P. R. Meinhold, G. Morgante, D. Pearson, F. Perrotta, G. Polenta, T. Poutanen, M. Sandri, M. D. Seiffert, A.-S. Suur-Uski, D. Tavagnacco, L. Terenzi, M. Tomasi, J. Valiviita, F. Villa, R. Watson, A. Wilkinson, A. Zacchei, A. Zonca, B. Aja, E. Artal, C. Baccigalupi, A. J. Banday, R. B. Barreiro, J. G. Bartlett, N. Bartolo, P. Battaglia, K. Bennett, A. Bonaldi, L. Bonavera, J. Borrill, F. R. Bouchet, C. Burigana, P. Cabella, B. Cappellini, X. Chen, L. Colombo, M. Cruz, L. Danese, O. D'Arcangelo, R. D. Davies, G. de Gasperis, A. de Rosa, G. de Zotti, C. Dickinson, J. M. Diego, S. Donzelli, G. Efstathiou, T. A. Enßlin, H. K. Eriksen, M. C. Falvella, F. Finelli, S. Foley, C. Franceschet, E. Franceschi, T. C. Gaier, R. T. Génova-Santos, D. George, F. Gómez, J. González-Nuevo, K. M. Górski, A. Gruppuso, F. K. Hansen, D. Herranz, J. M. Herreros, R. J. Hoyland, N. Hughes, J. Jewell, P. Jukkala, M. Juvela, P. Kangaslahti, E. Keihänen, R. Keskitalo, V.-H. Kilpia, T. S. Kisner, J. Knoche, L. Knox, M. Laaninen, A. Lähteenmäki, J.-M. Lamarre, R. Leonardi, J. León-Tavares, P. Leutenegger, P. B. Lilje, M. López-Caniego, P. M. Lubin, M. Malaspina, D. Marinucci, M. Massardi, S. Matarrese, F. Matthai, A. Melchiorri, L. Mendes, M. Miccolis, M. Migliaccio, S. Mitra, A. Moss, P. Natoli, R. Nesti, H. U. Nørgaard-Nielsen, L. Pagano, R. Paladini, D. Paoletti, B. Partridge, F. Pasian, V. Pettorino, D. Pietrobon, M. Pospieszalski, G. Prézeau, M. Prina, P. Procopio, J.-L. Puget, C. Quercellini, J. P. Rachen, R. Rebolo, M. Reinecke, S. Ricciardi, G. Robbers, G. Rocha, N. Roddis, J. A. Rubino-Martín, M. Savelainen, D. Scott, R. Silvestri, A. Simonetto, P. Sjoman, G. F. Smoot, C. Sozzi, L. Stringhetti, J. A. Tauber, G. Tofani, L. Toffolatti, J. Tuovinen, M. Türlér, G. Umana, L. Valenziano, J. Varis, P. Vielva, N. Vittorio, L. A. Wade,

- C. Watson, S. D. M. White, and F. Winder. Planck early results. III. First assessment of the Low Frequency Instrument in-flight performance. *A&A*, 536:A3, December 2011.
- Planck Collaboration. Planck early results. XXV. Thermal dust in nearby molecular clouds. *A&A*, 536:A25, December 2011.
- Planck Collaboration. Planck early results. XXIV. Dust in the diffuse interstellar medium and the Galactic halo. *A&A*, 536:A24, December 2011.
- Planck Collaboration. Planck Early Results: The Galactic Cold Core Population revealed by the first all-sky survey. *ArXiv e-prints*, January 2011.
- Planck Collaboration. Planck early results. XXII. The submillimetre properties of a sample of Galactic cold clumps. *A&A*, 536:A22, December 2011.
- Planck Collaboration. Planck early results. XXI. Properties of the interstellar medium in the Galactic plane. *A&A*, 536:A21, December 2011.
- Planck Collaboration. Planck early results. XX. New light on anomalous microwave emission from spinning dust grains. *A&A*, 536:A20, December 2011.
- Planck Collaboration. Planck early results. XIX. All-sky temperature and dust optical depth from Planck and IRAS. Constraints on the "dark gas" in our Galaxy. *A&A*, 536:A19, December 2011.
- Planck Collaboration. Planck early results. XVIII. The power spectrum of cosmic infrared background anisotropies. *A&A*, 536:A18, December 2011.
- Planck Collaboration. Planck early results. XII. Cluster Sunyaev-Zeldovich optical scaling relations. *A&A*, 536:A12, December 2011.
- Planck Collaboration. Planck early results. XI. Calibration of the local galaxy cluster Sunyaev-Zeldovich scaling relations. *A&A*, 536:A11, December 2011.
- Planck Collaboration. Planck early results. IX. XMM-Newton follow-up for validation of Planck cluster candidates. *A&A*, 536:A9, December 2011.
- Planck Collaboration. Planck early results. VIII. The all-sky early Sunyaev-Zeldovich cluster sample. *A&A*, 536:A8, December 2011.
- Planck Collaboration. Planck early results. II. The thermal performance of Planck. *A&A*, 536:A2, December 2011.
- Planck Collaboration. Planck early results. I. The Planck mission. *A&A*, 536:A1, December 2011.
- Planck Collaboration. Planck early results. XIV. ERCSC validation and extreme radio sources. *A&A*, 536:A14, December 2011.
- T. Kisner. [Astrophysical Data Processing on Heterogenous Many-Core Systems](#). Invited talk at High-Performance AstroComputing Center 2010 (SDSC), 2010.
- T. Kisner. [Trends in High Performance Computing and their Impact on Astrophysical Data Processing](#). Invited talk at GRITS 2010 (IPAC/Caltech), 2010.
- The Polarbear Collaboration, J. Errard, P. A. R. Ade, A. Anthony, K. Arnold, F. Aubin, D. Boettger, J. Borrill, C. Cantalupo, M. A. Dobbs, D. Flanigan, A. Ghribi, N. Halverson, M. Hazumi, W. L. Holzapfel, J. Howard, P. Hyland, A. Jaffe, B. Keating, T. Kisner, Z. Kermish, A. T. Lee, E. Linder, M. Lungu, T. Matsumura, N. Miller, X. Meng, M. Myers, H. Nishino, R. O'Brien, D. O'Dea, C. Reichardt, I. Schanning, A. Shimizu, C. Shimmin, M. Shimon, H. Spieler, B. Steinbach, R. Stompor, A. Suzuki, T. Tomaru, H. T. Tran, C. Tucker, E. Quealy, P. L. Richards, and O. Zahn. The new generation CMB B-mode polarization experiment: POLARBEAR. *ArXiv e-prints*, November 2010.
- B. Reichborn-Kjennerud, A. M. Aboobaker, P. Ade, F. Aubin, C. Baccigalupi, C. Bao, J. Borrill, C. Cantalupo, D. Chapman, J. Didier, M. Dobbs, J. Grain, W. Grainger, S. Hanany, S. Hillbrand, J. Hubmayr, A. Jaffe, B. Johnson, T. Jones, T. Kisner, J. Klein, A. Korotkov, S. Leach, A. Lee, L. Levinson, M. Limon, K. MacDermid, T. Matsumura, X. Meng, A. Miller, M. Milligan, E. Pascale, D. Polsgrove, N. Ponthieu, K. Raach, I. Sagiv, G. Smecher, F. Stivoli, R. Stompor, H. Tran, M. Tristram, G. S. Tucker, Y. Vinokurov, A. Yadav, M. Zaldarriaga, and K. Zilic. EBEX: a balloon-borne CMB polarization experiment. In *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, volume 7741 of *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, July 2010.
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