Theodore Kisner

Curriculum Vitæ

Lawrence Berkeley National Laboratory
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Projects and Experience

July 2010 – 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 PolarBear, EBEX, LiteBIRD, and Simons Observatory teams.

August 2011 – Present
DESI Project, *LBNL*, Berkeley, CA.
Worked on algorithms and software tools for maximum likelihood spectral extraction. Developed parallel data reduction pipeline for nightly processing. Worked on algorithms and software for fiber assignment.

July 2006 – August 2011
US Planck Team, *LBNL and Space Science Lab*, Berkeley, CA.
Developed a parallel software framework for simulation and reduction of data from the Planck telescope.

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).

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

Carlos Hervías-Caimapo, Kevin Wolz, Adrien La Posta, Susanna Azzoni, David Alonso, Kam Arnold, Carlo Baccigalupi, Simon Biquard, Michael L. Brown, Erminia Calabrese, Yuji Chinone, Samuel Day-Weiss, Jo Dunkley, Rolando Dünner, Josquin Errard, Giulio Fabbian, Ken Ganga, Serena Giardiello, Emilie Hertig, Kevin M. Huffenberger, Bradley R. Johnson, Baptiste Jost, Reijo Keskitalo, Theodore S. Kisner, Thibaut Louis, Magdy

Morshed, Lyman A. Page, Christian L. Reichardt, Erik Rosenberg, Max Silva-Feaver, Wuhyun Sohn, Yoshinori Sueno, Dan B. Thomas, Ema Tsang King Sang, Amalia Villarrubia-Aguilar, and Kyohei Yamada. The simons observatory: validation of reconstructed power spectra from simulated filtered maps for the small aperture telescope survey. *Journal of Cosmology and Astroparticle Physics*, 2025(06):055, June 2025.

J. Guy, S. Bailey, A. Kremin, Shadab Alam, D. M. Alexander, C. Allende Prieto, S. BenZvi, A. S. Bolton, D. Brooks, E. Chaussidon, A. P. Cooper, K. Dawson, A. de la Macorra, A. Dey, Biprateep Dey, G. Dhungana, D. J. Eisenstein, A. Font-Ribera, J. E. Forero-Romero, E. Gaztañaga, S. Gontcho A Gontcho, D. Green, K. Honscheid, M. Ishak, R. Kehoe, D. Kirkby, T. Kisner, Sergey E. Koposov, Ting-Wen Lan, M. Landriau, L. Le Guillou, Michael E. Levi, C. Magneville, Christopher J. Manser, P. Martini, Aaron M. Meisner, R. Miquel, J. Moustakas, Adam D. Myers, Jeffrey A. Newman, Jundan Nie, N. Palanque-Delabrouille, W. J. Percival, C. Poppett, F. Prada, A. Raichoor, C. Ravoux, A. J. Ross, E. F. Schlafly, D. Schlegel, M. Schubnell, Ray M. Sharples, Gregory Tarlé, B. A. Weaver, Christophe Yéche, Rongpu Zhou, Zhimin Zhou, and H. Zou. The spectroscopic data processing pipeline for the dark energy spectroscopic instrument. *The Astronomical Journal*, 165(4):144, March 2023.

M. Tristram, A. J. Banday, K. M. Górski, R. Keskitalo, C. R. Lawrence, K. J. Andersen, R. B. Barreiro, J. Borrill, H. K. Eriksen, R. Fernandez-Cobos, T. S. Kisner, E. Martínez-González, B. Partridge, D. Scott, T. L. Svalheim, H. Thommesen, and I. K. Wehus. Planck constraints on the tensor-to-scalar ratio. *Astronomy & Astrophysics*, 647:A128, March 2021.

T. Kisner. MADmap and TOAST for PACS. Talk at Herschel Map-making Conference 2013 (ESOC, Madrid), 2013.

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.

C. M. Cantalupo et al. MADmap: A Massively Parallel Maximum-Likelihood Cosmic Microwave Background Map-Maker. *ArXiv e-prints (submitted to Astrophysical Journal Supplement)*, June 2009.

R. Keskitalo et al. Residual noise covariance for Planck low-resolution data analysis. *ArXiv e-prints (submitted to Astronomy and Astrophysics)*, May 2009.

M. A. J. Ashdown et al. Making maps from Planck LFI 30 GHz data with asymmetric beams and cooler noise. *A&A*, 493:753–783, January 2009.

W. C. Jones et al. Instrumental and analytic methods for bolometric polarimetry. *A&A*, 470:771–785, August 2007.

T. E. Montroy et al. A Measurement of the CMB <EE> Spectrum from the 2003 Flight of BOOMERANG. *ApJ*, 647:813–822, August 2006.