

Theodore Kisner

Curriculum Vitæ

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).

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.

Selected Publications and Talks

- 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.
- 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 \$\langle EE \rangle\$ Spectrum from the 2003 Flight of BOOMERANG](#). *ApJ*, 647:813–822, August 2006.