

Combined Cosmology Programs with SPIRE and Planck HFI

J.J. Gromke, California Institute of Technology, 1200 California Blvd, Pasadena, CA 91125
jjg@astro.caltech.edu

J.J. Bock^{1,2}, J. Glenn³, and H. Nguyen¹
Jet Propulsion Laboratory¹, California Institute of Technology², University of Colorado³

The FIRST Spectral and Photometric Imaging Receiver (SPIRE) employs arrays of bolometric detectors for sensitive space-borne photometry and spectroscopy at sub-millimeter wavelengths. We envision a joint cosmology program with SPIRE that exploits the rich data set provided by the first Planck/HFI all-sky surveys. The early-release Planck sub-millimeter all-sky survey will detect galaxies at significant cosmological distances, including a fraction that may be gravitationally lensed. Follow-up spectral line surveys with SPIRE will determine the redshift and will probe the interstellar medium in these extremely far-infrared luminous galaxies. Spectral and imaging observations of clusters of galaxies, detected by Planck via the Sunyaev-Zel'dovich effect, may assess relativistic corrections to the S-Z distortion, and probe the contribution from thermal dust emission. Finally, the evolution and clustering of galaxies at high redshift may be probed by fluctuations in the extra-galactic far-infrared background. A P(D) analysis with a deep SPIRE survey will probe the far-infrared background at higher sensitivity and angular resolution over a smaller region of sky, complementing proposed studies of the far-infrared background with Planck.