A SUBMILLIMETER/MILLIMETER SPECTROMETER
FOR HIGH REDSHIFT GALAXY SURVEYS
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Hien Trong Nguyen, James Bock, Mark Dragovan
Jet Propulsion Laboratory, California Institute of Technology

Brett Kornfeld
Department of Physics, California Institute of Technology

ABSTRACT

We propose to develop a moderate resolution millimeter-wave spectrometer
cover a wide spectral range from 800 um to 2.3 mm. The spectrometer (BASS)
will be the first instrument of its kind with the sensitivity and spectral
bandwidth optimized for systematic follow-up observations of the far-infrared
galaxies to be detected in the next generation of survey instruments,
including the mm-wave camera BOLOCAM and SIRTF/MIIPS. The spectrometer
will use 4x85 bolometer array similar to those being developed for the
ESA/NASA Planck Surveyor and FIRST space missions, but with significantly
higher sensitivity. BASS will have bandwidth two orders of magnitude
larger than existing heterodyne instruments, and sensitivity 10 times
greater than Fourier-transform spectrometers coupled to direct detectors.
The spectrometer will greatly reduce the time required to obtain a
complete millimeter-wave spectrum of distant infrared-bright galaxies,
making determination of millimeter-wave redshifts a practicality for
the first time.