

THE Q/U IMAGING EXPERIMENT

**Gaier Todd, J. Gundersen, A. Miller, C. Lawrence, T. Pearson, A. Readhead,
M. Seiffert, S. Staggs, B. Winstein**

Observational Systems, Jet Propulsion Laboratory, 4800 Oak Grove Dr.,
Pasadena, CA, USA
91109

The Q/U Imaging Experiment (QUIET) will measure the polarization of the Cosmic Microwave Background (CMB) with unprecedented sensitivity. QUIET will probe the CMB at both degree scales, in search of the primordial gravity-wave signature, and at arcminute scales to measure the effect of gravitational lensing.

The heart of the experiment is an array of InP transistor based, pseudocorrelation polarimeters. Each pixel in the array is a coherent receiver capable of measuring the Q and U Stokes parameters simultaneously. The array will comprise nearly 1000 polarimeter elements to achieve unprecedented sensitivity to CMB polarization. The complete array will achieve a sensitivity of $\sim 10 \mu\text{K}\sqrt{s}$ at 40 and 90 GHz. Development of the array will employ novel approaches to module assembly and test, optics and feed design and fabrication, high performance low-cost polarization transducers and large cryogenic systems.

We will describe the complete experiment and report on development progress.

We will report on the status of module development and performance, demonstration array performance and large array development.