

CAPMAP: A Multipolarimeter Experiment for Measuring the Cosmic Microwave Background

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Abstract

CAPMAP comprises multiple correlation receivers at 90 and 40 GHz making observations of the cosmic microwave background radiation from the 7 m Bell Labs telescope in Crawford Hill, NJ. In the winter of its first year (2003), four W-band polarimeters were deployed with 3' beams. This resolution provides sensitivity to the maximum signal in the angular power spectrum of the CMB polarization anisotropy.

Performance of the CAPMAP instrument and initial results from its first season of data will be discussed. We will include techniques of calibration and verification of data quality, as well as details of the polarimeter design. The polarimeters use MMIC HEMT amplifiers provided by JPL in a heterodyne, analog correlator. The bandwidth is 16 GHz, broken into three equal-sized band for better phase tuning. The total power in each arm of the receivers is also monitored. Noise performance and polarization offsets will be presented.