

Measuring CMB polarization with DASI

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The Degree Angular Scale Interferometer (DASI) has recently detected polarization of Cosmic Microwave Background using data from 270 days of dedicated observations during its second and third seasons at the Amundsen-Scott South Pole research station. Interferometric observations in all four Stokes parameters were obtained within two 3.4 degree FWHM fields separated by one hour in Right Ascension, over a frequency range of 26 - 36 GHz. The observed polarization is found to have an amplitude and spatial pattern consistent with predictions, offering a validation of the standard theoretical framework of CMB physics and lending confidence to the values of cosmological parameters that have been derived from CMB measurements.

The DASI instrument is currently undertaking its fourth season of operation at the South Pole, and in this talk we discuss the current status of results from previously reported and ongoing CMB polarization observations. We review the instrumental techniques used by DASI to achieve the sensitivity and control over systematics necessary to measure the extremely faint, extended CMB polarization pattern from a terrestrial site. These techniques are relevant to facing the next set of experimental challenges, which include making precision measurements of the polarization power spectra and searching for new cosmological physics in B mode polarization patterns.