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THE SOUTH-POLE BASED QUAD COSMIC MICROWAVE BACKGROUND POLARIZATION TELESCOPE

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QUaD is the successor to the highly successful DASI telescope, located at the Martin A. Pomerantz Observatory of the USAP's Amundsen-Scott base. DASI was the first experiment to detect the polarization of the Cosmic Microwave Background; QUAD will map the polarization to micro-Kelvin sensitivity at arc-minute detail. These maps will test the predictions of the current Cosmological model, as well as improve the accuracy of some Cosmological parameters by breaking degeneracies in the current data.

This increase in sensitivity and resolution has been achieved by combining a new, state-of-the-art, microwave array camera with the existing mount / control system at the excellent South Pole site. Amundsen-Scott is the premier microwave observatory on the planet due to the exceptionally low water vapour content of the Polar atmosphere. The site also offers a complete lack of contaminating sunlight during the Austral Winter, the diurnal stability, and the unique ability to repeatedly integrate year-round on the same patch of sky.

The QUAD instrument was installed at its Antarctic site over the 2004--05 Austral Summer and successfully completed its first season of observations over the 2005 Austral Winter. Minimal changes were made this last summer for the current 2006 Winter season. The 05 data is still being analysed at time of writing, but preliminary maps and noise spectra demonstrate a significant improvement to presently published results.