



Characterization of the first multichroic polarimeter array on the Atacama Cosmology Telescope

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The Atacama Cosmology Telescope Polarimeter (ACTPol) is a polarization sensitive receiver for the 6 m Atacama Cosmology Telescope (ACT), aiming to make measurements of the small angular scale polarization anisotropies in the Cosmic Microwave Background (CMB). The entire focal plane is composed of three detector arrays, containing over 3000 transition edge sensors (TES) in total. The first two detector arrays, observing at 146 GHz were deployed in 2013 and 2014 respectively. The third and final array is designed to be multichroic, sensitive to both 90 GHz and 150 GHz. Fabricated at NIST, this dichroic array consists of 255 pixels, with a total of 1020 polarization sensitive bolometers and is coupled with broad band gold-plating stacks of silicon platelet monolithic feed horn array. Detectors are read out using time-division SQUID multiplexing and cooled by a dilution refrigerator providing a sub-100 mK bath temperature. The multichroic array achieved first light on ACT in February 2015. I will present an overview of the assembly and characterization of this multichroic array in the lab, and the initial detector performance in Chile.