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Horn-Coupled LEKIDs for Millimeter Wavelengths

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I will discuss the design, testing, and results of prototype horn-coupled lumped-element kinetic inductance detectors (LEKIDs) for observation of the Cosmic Microwave Background (CMB). The LEKIDs are made from thin aluminium film. We fabricated twenty-element arrays optimized for a spectral band centered on 150 GHz. We characterized the detectors in both a dark environment and with the horn-apertures pointed towards a beam-filling cryogenic blackbody load. The yield across multiple arrays is 91% and the measured noise equivalent temperatures (NET) for a 4 K optical

load is 26+/-6 uK sqrt(s). Testing with a titanium nitride (TiN) metal mesh absorbing layer, designed to mitigate cross-talk between detectors, is underway. In addition, we are starting to test a related dual polarization design and will present initial results from these measurements.