



Development of sub-micron broadband lens-coupled LEKIDs for sub-mm astronomy

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We present the preliminary results on the characterization of sub-mm broadband lens-coupled Lumped Element Kinetic Inductance Detectors (LEKIDs). The LEKID is designed to absorb radiation from 1.5 to 3THz with an efficiency of 80% over the whole band, and consists of a combination of niobium titanium nitride (NbTiN) and aluminium (Al) layers on a sapphire substrate. The thick 300nm NbTiN is used to define the coplanar-waveguide (CPW) feed line and ground planes by conventional photolithography and reactive ion etching, whereas the thin 15 nm Al is used for wide capacitor inter-digitated fingers defined using mask-less photolithography and the narrow meander lines (200nm wide) defined using electron beam lithography and ion milling. A small 7 pixel test array has been fabricated in order to both test the material properties as well as optical performance.