



Performance and Characterisation of the Medium-to-High Background SpaceKIDS Demonstrator

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The goal of the SpaceKIDS project is to develop and demonstrate the capabilities and the suitability of Kinetic Inductance Detectors for use in future space science and Earth observing missions working at far infrared to millimetre wavelengths. Here we present a full system characterisation of the medium-to-high background demonstrator operating at 350 GHz at typical background power levels between 0.2-2 pW. Results are presented from the baseline, kilo-pixel detector array, which consists of NbTiN /Al hybrid antenna-coupled resonators mounted behind a Si micro-lens array. The array is mounted on the cold stage of a three-stage sorption cooler achieving a sample temperature of 230 mK and is read out with dedicated readout electronics operating within an octave of bandwidth at 4 GHz. We outline the measurement methodology and present a full array characterisation detailing various aspects of the detector

performance including beam maps, spectral response, detector linearity, dynamic range and cosmic-ray susceptibility, and compare these results to the goals set out within the SpaceKIDs framework.