

Development of a MKID camera for APEX

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Abstract

Based on our reconfigurable FPGA spectrometer technology, we have developed a read-out system, operating in the frequency domain, for arrays of Microwave Kinetic Inductance Detectors (MKIDs). The readout consists of a combination of two digital boards: A programmable DAC-/FPGA-board (tone-generator) to stimulate the MKIDs detectors and an ADC-/FPGA-unit to analyze the detectors response. Laboratory measurement show no deterioration of the noise performance compared to low noise analog mixing. Thus, this technique allows capturing several hundreds of detector signals with just one pair of coaxial cables.

This readout technology together with the encouraging performance of the MKID detectors developed by SRON over the last years, initiated the construction of a large MKID camera for the APEX 12m telescope.

As a pathfinder camera, we developed a camera with up to 81 pixels, depending on the detector chip used, during the last year. This system, currently being tested in the lab, will have its first telescope run at APEX in early spring 2010.

We will report about the system, its performance as verified in the lab and, if possible on the time-scale of the conference, the first results from the field tests at the telescope.