



## Design of a 2 mm wavelength KIDs prototype camera for the Large Millimeter Telescope

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A new camera is being developed for the Large Millimeter Telescope (Sierra Negra, México) by an international collaboration with the University of Massachusetts, the University of Cardiff and Arizona State University. The camera is based on kinetic inductance detectors (KIDs), proved technology that offers advantages over other detection technologies for mm-wavelength astronomy. The instrument have 100 pixels array of KIDs to image the 2 mm wavelength band and is designed for closed-cycle operation by using a pulse tube cryocooler along with a three stage sub kelvin 3He cooler, to provide a 250 mK detector stage. RF-cabling is used to readout the detectors from room temperature to 250 mK focal plane, the amplification stage is achieved with a

cryogenic low noise amplifier operating at 4K. The readout electronics is based on open-source reconfigurable open architecture computing hardware in order to perform real-time microwave transmission measurements and monitoring the resonance frequency of each detector, as well as the detection process.

This paper describes the conceptual design of the instrument, including the detectors development, optics layout, cryogenic hardware and readout. Simulations and performance data of the main subsystems are discussed.