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QUBIC: using TESs with a bolometric interferometer to characterize the polarisation of the CMB

Wednesday, July 24, 2019 12:00 PM (15 minutes)

QUBIC (Q & U Bolometric Interferometer for Cosmology) is an international ground-based experiment dedicated in the measurement of the polarized fluctuations of the Cosmic Microwave Background (CMB). It is based on bolometric interferometry, an original detection technique which combine the immunity to systematic effects of an interferometer with the sensitivity of low temperature incoherent detectors. QUBIC will be deployed in Argentina, at the Alto Chorrillos mountain site near San Antonio de los Cobres, in the Salta province.

The QUBIC detection chain consists in 2048 NbSi Transition Edge Sensors (TESs) cooled to 350mK.The voltage-biased TESs are read out with Time Domain Multiplexing based on Superconducting QUantum Interference Devices (SQUIDs) at 1 K and a novel SiGe Application-Specific Integrated Circuit (ASIC) at 60 K allowing to reach an unprecedented multiplexing (MUX) factor equal to 128.

The QUBIC experiment is currently being characterized in the lab with a reduced number of detectors before upgrading to the full instrument. I will present the last results of this characterization phase with a focus on the detectors and readout system.

Less than 5 years of experience since completion of Ph.D

N

Student (Ph.D., M.Sc. or B.Sc.)

N

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