



A 248 TES Array for the detection of CMB B-mode polarization

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The cosmic microwave background (CMB), very first light emitted by the Universe, is a fundamental source of information for present cosmology. Being partially polarized, this radiation should display imprints that could probe the early Universe : B-modes. The detection in millimeter waves of those B-modes is therefore one of the most challenging issue of modern cosmology as it would allow us to constrain inflation models. As part of the QUBIC (Q & U Bolometric Interferometer for Cosmology) instrument which aims to measure those imprints in the CMB polarization, two focal planes of four 248 Transition Edge Sensor (TES) arrays each have been developed to ensure a NEP of $\sim 4 \cdot 10^{-17}$ W/Hz^{0.5}. Each TES consists of a cooled down voltage-biased superconducting NbSi thin film with a transition temperature $T_c \sim 440$ mK. It is then coupled to a time domain multiplexed readout electronics based on Superconducting Quantum Interference Devices (SQUIDs) and an additional cryogenic integrated circuit which provides a second multiplexing stage. We will present the production process of these 248 TES arrays and show the first results that have been obtained in the dilution fridge of the laboratory.