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Design of low T_c TES chips as sensors for low background calorimeter arrays

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TES based radiation detectors with highly multiplexed SQUID readout have been widely adapted in microcalorimeter based experiments and are the technology of choice of many next generation experiments (CMB-S4, Athena X-ray satellite and others) owing to their excellent energy resolution, threshold and their fast response. These properties also make them a very desirable choice for applications like the search for neutrino-less double beta decay with 300 g-scale Li_2MoO_4 calorimeters in CUPID or a search for CEνNS with 40 g-scale absorbers in Ricochet. In this talk we will discuss a first design of a self-contained low T_c TES readout chip that can be readily connected to various absorbers via a deposited Au film as phonon collector on the target. We will discuss several design studies including their impact on the science case and present first performance estimates from the thermal modeling of these devices.

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