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Abstract 1:
Development of a TES-based anti-coincidence detector for future x-ray observatories

Microcalorimeters onboard future x-ray observatories require an anti-coincidence detector to remove environmental backgrounds. In order to most effectively integrate this anti-coincidence detector with the main microcalorimeter array, both instruments should use similar read-out technology. The detectors used in the Cryogenic Dark Matter Search (CDMS) use a phonon measurement technique that is well suited for an anti-coincidence detector with a microcalorimeter array using SQUID readout. This technique works by using a transition-edge sensor (TES) connected to superconducting collection fins to measure the athermal phonon signal produced when an event occurs in the substrate crystal. Energy from the event propagates through the crystal to the superconducting collection fins, creating quasiparticles, which are then trapped as they enter the TES where they produce a signal. We are currently developing a prototype anti-coincidence detector for future x-ray missions and have recently fabricated test devices with Mo/Au TESs and Al collection fins. We will present results from the first tests of these devices which indicate a proof of concept that quasiparticle trapping is occurring in these materials.