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A Time of Flight Background Rejection Technique for Low Temperature Calorimeters JOHNNY GOETT, Los Alamos National Laboratory — Cryogenic bolometer detectors feature unmatched energy resolution, dynamic range and efficiency. In spite of these strengths, low energy alpha depositions introduce a continuum background below 5 MeV that present severe challenges to the advancement of precision low threshold spectroscopy. The indifference of the bolometer to different types of radiation, which goes hand in hand with what makes it such an excellent calorimeter, will limit the sensitivity of future macro-bolometer arrays to new physics. To develop new capabilities with this technology, we are developing a research program that leverages the spectrum and time- of-flight of ballistic phonon modes in the bulk of the material to introduce discrimination capabilities between alpha, beta and gamma radiation in a single detector. Applications in both pure physics research and materials assay will be discussed.

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