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Searching for keV-scale Neutrinos in ^{7}Be Decay with the BeEST Experiment[1] KYLE LEACH, Colorado School of Mines, BEEST COLLABORATION — Sterile neutrinos - unlike the active neutrinos in the SM - do not interact with normal matter as they move through space, and their existence is best probed via momentum conservation with SM particles in radioactive decay. One way to observe these momentum recoil effects experimentally is through high-precision measurements of electron-capture (EC) nuclear decay, where the final state only contains the neutrino and a recoiling atom. This approach is a powerful method for BSM neutrino mass searches since it relies only on the existence of a heavy neutrino admixture to the active neutrinos - a generic feature of neutrino mass mechanisms - and not on the model-dependent details of their interactions. In this talk, we will describe the Beryllium Electron capture in Superconducting Tunnel junctions (BeEST) concept, which measures the eV-scale radiation that follows the decay of ^{7}Be ions implanted into sensitive, high-rate quantum sensors. We will also report the first results in our experimental program, and future work to increase sensitivity.

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Kyle Leach
Colorado School of Mines

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