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Double beta decay Q-values of ^{130}Te, ^{128}Te, and ^{120}Te JESSICA MINTZ, UC Berkeley, ERIC NORMAN, UC Berkeley, LLNL, NICHOLAS SCIELZO, LLNL, CANADIAN PENNING TRAP COLLABORATION — The observation of neutrinoless double-beta decay would constrain the absolute neutrino mass scale, determine whether or not the neutrino is its own antiparticle, and imply that lepton number is not conserved. In order to search for this elusive decay, the CUORICINO and CUORE experiments at Gran Sasso National Laboratory use $^{nat}TeO_2$ bolometers to measure the temperature increase from radioactive decays in the crystals. Since the signature of neutrinoless double-beta decay is a peak at the full decay energy Q-value, it is critical to measure this energy to a very high precision. The three isotopes of natural Te which undergo double beta decay are ^{130}Te to ^{130}Xe, ^{128}Te to ^{128}Xe, and ^{120}Te to ^{120}Sn. Mass differences between each of these parent and daughter nuclei have been measured using the Canadian Penning Trap Mass Spectrometer at Argonne National Laboratory to within 0.5 keV. The method by which nuclear masses are measured with the Penning trap will be described. Preliminary results for the double beta decay Q-values of ^{130}Te, ^{128}Te, and ^{120}Te will be presented.

Nicholas Scielzo
LLNL

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