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Search for double electron capture in Sn-112 using gamma-ray TES

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Double electron capture (ECEC) is a second-order weak interaction process in which two orbital electrons are captured simultaneously by a nucleus. Its half-life serves as a sensitive probe for testing nuclear structure models. To date, only ECEC in xenon-124 has been observed, indicating the need for new experimental techniques. In this presentation, we report a search for double electron capture in Sn-112 using transition edge sensors (TES). The use of gamma-ray TES with Sn absorber allows us to search for ECEC reaction efficiently by detecting X-rays and/or Auger electrons following ECEC. We will present the current status of the measurement using 8-pixels TESs array with 0.8 mm cubic tin absorbers, and will discuss the future sensitivity assuming the increase of pixelization and fiducial volume.

Collaboration you are representing

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