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Type: **Parallel Session talk**

Measurement of Double Electron Capture of Xe-124 with XENON1T

Tuesday, August 6, 2019 5:30 PM (12 minutes)

Summary

Searches for dark matter use detectors that can measure the rarest events ever recorded. The XENON1T detector uses a dual phase liquid xenon time projection chamber (TPC) to search for dark matter collisions with xenon atoms, but by reaching the lowest background ever achieved at the keV scale, it is also sensitive to other rare physics phenomena. The double electron capture of xenon-124 is one such phenomenon, and XENON1T was able to observe this decay and provide a half-life measurement for this decay of 1.8×10^{22} years, the longest half-life ever directly observed experimentally.

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Session Classification: Rare Event Detectors (Parallel)

Track Classification: Neutrino Oscillations and Masses