Contribution ID: **356** Type: **Poster**

Analysis of High Energy Events in XENON1T

The XENON1T experiment searches for Weakly Interacting Massive Particles (WIMPs) with a dual-phase xenon time projection chamber (TPC). To extend its physics reach, the efforts of the XENON collaboration are directed toward exploring other detection channels. For this purpose, considerable work on the signal reconstruction and data analysis has been done to extend the available energy range up to 3 MeV, two orders of magnitude higher than the standard WIMP analysis. This would allow one to search for the neutrinoless double beta decay of ^{136}Xe, which is fundamental to probing the Majorana nature of neutrinos and solving the hierarchy problem. The achievements and future prospects for the high energy analysis with dual-phase TPCs will be presented.

Mini-abstract

Unprecedented energy resolution in the MeV range measured in XENON1T

Experiment/Collaboration

XENON

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Session Classification: Poster Session 2