



Contribution ID: 53

Type: **Contributed Parallel Talk**

Prototyping the SoLAr dual readout LAr TPC to enable solar neutrino detection program

Tuesday, 24 October 2023 16:20 (20 minutes)

SoLAr is a next-generation liquid argon time projection chamber (LAr TPC) detector aimed at detecting solar neutrinos. It uses and drives the latest technologies needed to expand the detectable energy range to the MeV regime. In addition to proper background rejection and suppression SoLAr creates the possibility to detect the “hep branch” directly for the first time. SoLAr will collect the light and charge deposits in argon on the same pixelated anode plane, creating the possibility to localize events using combined charge and light measurements for tracking. A first prototype of the SoLAr detector proving the concept of collecting light and charge on one plane was constructed and took cosmic-ray data in October of 2022. This talk will give an introduction to the concept of SoLAr, and the operation of the first SoLAr prototype.

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Session Classification: Data Science and Detector R&D

Track Classification: Data Science and Detector R&D