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Solar Neutrinos in Liquid Argon (SoLAr)

Monday 28 August 2023 16:30 (15 minutes)

Massive liquid argon TPCs developed for DUNE have significant potential in the physics of MeV neutrinos and offer unprecedented opportunities for the observation of solar neutrinos. The SoLAr collaboration has proposed an innovative readout system to enhance the physics reach of the DUNE Module of Opportunity, perform high-precision measurements of 8B neutrinos, and provide the first observation of solar neutrinos from the Helium-proton fusion (HEP neutrinos). In this talk, we summarize the status of the project and the results obtained in 2022-23. The novel light-charge readout system by SoLAr was tested in a dedicated prototype and we present the first combined light-charge measurements with cosmic rays obtained at the University of Bern. Thanks to the prototyping and simulation results, we update the physics reach of SoLAr with an emphasis on background mitigation. Finally, we present the perspectives for the implementation of SoLAr in DUNE and the validation of this novel technology at the Boulby underground laboratories.

Submitted on behalf of a Collaboration?

Yes

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