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The Recoil Directionality (ReD) Experiment

Wednesday, May 26, 2021 9:30 AM (18 minutes)

Directional sensitivity to nuclear recoils would provide a smoking gun for a possible discovery of dark matter in the form of WIMPs. Given this potential importance, a new dedicated experiment, ReD (Recoil Directionality), was designed in the framework of the DarkSide Collaboration. A small dual-phase liquid argon TPC is irradiated with neutrons produced by the p(Li7,Be7)n reaction at the INFN Laboratori Nazionali del Sud (LNS), Catania, Italy, such to produce Ar nuclear recoils in the range (20 – 100 keV). Energy and direction of nuclear recoils are inferred by the detection of the elastically-scattered neutron by a set of scintillation detectors. Furthermore, ReD can be operated to study the response of the TPC to very low-energy nuclear recoils (in the keV range). In this contribution the latest recents results on the characterization and the optimization of the ReD LAr TPC will be presented, together with an overview on the forthcoming measurements with a Cf252 neutron source.

TIPP2020 abstract resubmission?

No, this is an entirely new submission.

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