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Type: Talk

The DARKSIDE-20k neutron veto

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Darkside-20k is a global direct dark matter search experiment situated at Laboratori Nazionali del Gran Sasso, designed to reach a total exposure of 200 tonne-years free from instrumental backgrounds. The core of the detector is a dual phase time projection chamber (TPC) filled with 50 tonnes of low-radioactivity liquid argon. This is surrounded by an active neutron veto, employing Gadolinium-loaded polymethylmethacrylate (Gd-PMMA), and hosted inside a protoDUNE-like cryostat. The most dangerous background to the dark matter search comes from nuclear recoils induced by radiogenic neutrons, since this process can mimic a dark matter scattering-induced recoil. Neutron-induced nuclear recoils are rejected by identifying the presence of the neutron. The DarkSide-20k detector has a novel design in which the neutron veto and the TPC are integrated into a single mechanical unit that sits in a common bath of low-radioactivity argon. The entire TPC wall is surrounded by a Gd-PMMA shell which is equipped with large area Silicon Photomultiplier (SIPMs) array detectors. The talk will be focus on current status of neutron veto design and expected performances.

Is this abstract from experiment?

Yes

Name of experiment and experimental site

DarkSide-20k

Is the speaker for that presentation defined?

Yes

Details

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Internet talk

No

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