

Direct Dark Matter Search in the DarkSide-20k Experiment

Thursday 18 July 2024 09:55 (17 minutes)

DarkSide-20k is a direct dark matter search experiment located at Laboratori Nazionali del Gran Sasso (LNGS). It is designed to reach an 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. The TPC is surrounded by a gadolinium-loaded polymethylmethacrylate (Gd-PMMA), which acts as a neutron veto, immersed in an low-radioactivity liquid argon bath enclosed in a stainless steel vessel, placed inside a proto-dune like cryostat. Readout systems consist of large-area Silicon Photomultiplier (SiPM) array detectors. DarkSide-20k aims to reach a dark matter- nucleon cross-section sensitivity of $7.4 \times 10^{-48} \text{ cm}^2$ at 90% confidence level for a dark matter mass of $1 \text{ TeV}/c^2$ in a 200 tonne-year exposure. This talk will give an overview of the status of construction and the physics program of the project.

Alternate track

I read the instructions above

Yes

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Session Classification: Dark Matter

Track Classification: 09. Dark Matter Detection