

The DarkSide-20k Experiment and the Search for Dark Matter with Underground Argon

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The DarkSide-20k experiment represents the latest phase of the Global Argon Dark Matter Collaboration, leveraging expertise from previous argon-based detectors. This effort is focused on constructing a dual-phase liquid argon time projection chamber (LAr-TPC) that will deploy 100 tonnes of underground argon outfitted with silicon photomultiplier (SiPM) arrays for precise light detection. Currently in the construction phase, the external cryostat is being installed at the Laboratori Nazionali del Gran Sasso (LNGS) in Italy. This presentation will provide an overview of the DarkSide detector, highlight its key design elements and its objectives, as well as updates on the ongoing construction of the underground infrastructure at LNGS.

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