

Development of DarkSide-20k Dual-Phase Time Projection Chamber

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DarkSide-20k direct dark matter search experiment aims at cumulative exposure of 200 ton-year with zero instrumental backgrounds by utilizing several novel approaches such as extraction of argon from underground sources, purification of argon via destination column, readout via large array of silicon-based photosensors and two nested liquid argon-based detectors housed within a ProtoDUNE-style membrane cryostat. A short overview of the DarkSide-20k experiment is presented emphasizing the novel design and development of the inner detector, a sealed acrylic dual-phase time projection chamber.

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