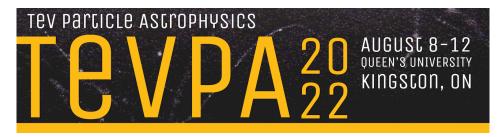
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The DarkSide-20k TPC and underground argon cryogenic system

Wednesday 10 August 2022 15:00 (20 minutes)

Darkside-20k will exploit the physical and chemical properties of liquid argon housed within a large dualphase time project chamber (TPC) in its direct search for dark matter. The TPC will utilize a compact, integrated design with many novel features to enable the 20t fiducial volume of underground argon. Underground argon (UAr) is sourced from underground CO2 wells and depleted in the radioactive isotope 39-Ar, greatly enhancing the experimental sensitivity to dark matter interactions. Sourcing and transporting O(100 t) of UAr for DarkSide-20k is costly, and a dedicated single-closed-loop cryogenic system has been designed, constructed, and tested to handle the valuable UAr. We present an overview of the DarkSide-20k TPC design and the first results from the UAr cryogenic system.

Collaboration name

DarkSide

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Track Classification: Dark Matter