

# Study of Ionization Channel Signals for Dual-Phase Argon TPC

*Wednesday 27 August 2025 18:00 (2 hours)*

The dual-phase argon time projection chamber (DArTPC) has shown exceptional sensitivity and background rejection capabilities, as demonstrated by the DarkSide-50 experiment. For future dark matter detection, particularly for low-mass dark matter ( $<10 \text{ GeV}/c^2$ ), exploiting exclusive ionization signal detection (S2-only) to achieve a low detection threshold is an exciting avenue of research. In this poster, we will present the ongoing R&D efforts focused on studying the S2 signal in a dedicated TPC setup. The current status of the experiments, including preliminary results on X-Y reconstruction, event selection, and pulse shape analysis will be discussed.

## Collaboration you are representing

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