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Purity monitor and TPC design for Xenoscope

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Next-generation experiments for dark matter detection such as liquid xenon (LXe) time projection chambers (TPC) have the main goal of probing the experimentally accessible parameter space for weakly interacting massive particles (WIMPs) as a dark matter candidate. The realization of such large detectors requires the demonstration of a series of technologies. We, therefore, aimed to built a full-scale TPC demonstrator in the vertical dimension called Xenoscope. The main goal of Xenoscope is to demonstrate electron drift for the first time in an LXe TPC over a 2.6 m distance and benchmark several key requirements for the next-generation experiment DARWIN. To this end, we have designed a modular, scalable purity monitor as well with the upgrade to a dual-phase TPC. This talk will cover the challenges encountered in the design of long drift regions in LXe.

TIPP2020 abstract resubmission?

No, this is an entirely new submission.

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