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Charge detection via proportional scintillation in a single-phase liquid xenon TPC

Dual-phase liquid/gas xenon TPCs are a well-established detector technology to search for WIMP Dark Matter. Nevertheless, the homogenious detection of the charge signal via proportional scintillation will be challenging at the scale of the next-generation detectors due to the size of the TPCs. The detection of the charge signal in the liquid phase of a single-phase TPC might be an option to circumvent this issue. In Freiburg we successfully operate a single-phase TPC demonstrator which exploits proportional scintillation in the strong electric field around thin wires. Some of the most recent results will be presented in this talk.

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