

Characterization of charge-sensitive tile anode for the nEXO experiment TPC

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nEXO is a proposed tonne-scale experiment searching for neutrinoless double-beta decay. In its current design it will be a single-phase time projection chamber (TPC).

Particular care is given to the anode, especially a design consisting of a charge-sensitive tile is under study. A modular array of tiles can collect e^- from a wide area. Since the tile provides 2d reconstruction, a TPC without Frisch grid can in principle be built, reducing the radioactive background.

Hence, the induction signal can be studied, potentially leading to a better energy reconstruction and its shape could also be used to discriminate signal from background.

A dedicated TPC has been built to test such tile in liquid xenon and to explore the potential benefit of a gridless approach. Results from this setup will be shown, including simultaneous light/charge detection and the study of PSA using the tile. Improvement on these two aspects could enhance energy resolution and background discrimination in nEXO.

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