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(G*) (POS-8) Induced signals in charge detection for neutrinoless double beta decay search with nEXO

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An area of active research in today's particle physics is the search for neutrinoless double beta decay (0νββ). In this hypothetical process, the nucleus of a radioactive isotope decays into a daughter and two electrons, while their associated neutrinos, observed in beta decays, annihilate each other. If observed, this process will provide an answer to the question of whether the neutrino is a Majorana particle, meaning that neutrino is its own anti-particle. The detection of this decay signal could also help establish the absolute scale of neutrino masses.
nEXO is a future experiment that will look for 0νββ in 5 tonnes of liquid xenon enriched to 90% 136Xe using the concept of a time projection chamber (TPC). Its baseline design employs finely segmented detection strips to collect the ionization from xenon interactions, while scintillation light is readout by photosensors. Our research focus on the development of the charge collection, where we plan to understand and validate induction signals as well as further explore the potential for improved spatial resolution.

Keyword-1

neutrinoless double beta decay

Keyword-2

nEXO Experiment

Keyword-3

Detector technology

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