

24th International Workshop on Next Generation Nucleon Decay & Neutrino Detectors (NNN25)

NNN25

International Workshop on Next Generation
Nucleon Decay and Neutrino Detectors

October 1-3, 2025



Contribution ID: 8

Type: **Poster**

Radon backgrounds assaying program for nEXO

Wednesday, October 1, 2025 5:30 PM (1 minute)

Future large-scale detectors searching for rare events such as neutrinoless double beta decay and dark matter nuclear recoils require understanding and an accurate measurement of the background sources present in such detectors. Radon contamination presents a challenge and significant contribution to the background of these experiments. This talk will present the radon assay program developed for the nEXO experiment. nEXO is a proposed next generation experiment planning to search for neutrinoless double beta decay of ^{136}Xe . nEXO plans to use a liquid-xenon filled time projection chamber that employs 5 tonnes of xenon, isotopically enriched to 90% in ^{136}Xe .

More specifically, this work presents the development of electrostatic chambers (ESC), instruments designed to measure radon emanation in a recirculating gas loop, state-of-art in the field sensitive to the micro-becquerel range. ESCs and other detection devices are planned to assay all experiment components that come in contact with the xenon or the liquid heat transfer fluid, envisage to surround the TPC.

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Session Classification: Poster Presentations

Track Classification: Posters: Poster Presentation