



## Poster session 4 – Friday 8 July

### P4.056 The sensitivity of the nEXO experiment to majorana neutrinos

C Licciardi

Carleton University, Canada

*on behalf of EXO-200 and nEXO collaborations*

As part of the next generation of searches to neutrino-less double beta decay, the nEXO Collaboration is designing a very large detector with 5 tonnes of enriched liquid Xenon-136. The experiment is based on the success of the EXO-200 detector, an ultra-low background time projection chamber with collection of both scintillation light and ionization charge, which has reached a sensitivity for the half-life of the decay of  $1.9 \times 10^{25}$  years with an exposure of 100 kg-y. The nEXO collaboration is pursuing various upgrades including the technique to recover and identify the barium daughter nucleus that would provide a background-free measurement of the Xenon double-beta decay.

The on-going R&D efforts are largely dependent on the sensitivity reach of the experiment. The currently projected half-life sensitivity is greater than  $5 \times 10^{27}$  years with 5 years of data, and it targets to cover the inverted ordering of neutrino masses. In the scenario where the Ba-tagging is demonstrated, it could probe part of the allowed region by the normal neutrino mass ordering.

This poster will briefly present the current concept of the detector, summarize the work on background estimations from dedicated Monte Carlo simulations and radio-assay measurements, with emphasis to the techniques used to evaluate the physics potentials of the nEXO experiment.