

# The Design and Status of nEXO: a Next-Generation Neutrinoless Double-Beta Decay Experiment

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The determination of the Majorana nature of the neutrino is the chief goal of the proposed next generation of neutrinoless double-beta decay ( $0\nu\beta\beta$ ) experiments. By achieving a sensitivity on the rate of  $0\nu\beta\beta$  in  $^{136}\text{Xe}$  of  $1.9 \times 10^{25}$  years, the predecessor to nEXO, EXO-200, has demonstrated the feasibility of using  $^{136}\text{Xe}$  for potentially observing neutrinoless double-beta decay. Building on the proven methods of EXO-200, the nEXO collaboration plans to use 5-tonnes of liquid Xe enriched in  $^{136}\text{Xe}$  in a single monolithic time projection chamber. The primary focus of design is to achieve a sensitivity to the  $0\nu\beta\beta$  of  $^{136}\text{Xe}$  of  $1 \times 10^{28}$  years within 10 years of data taking thereby allowing the experiment to probe the effective Majorana neutrino mass allowed by the inverted neutrino mass hierarchy. Initial design and current R&D efforts will be presented.

**Primary author:** Dr DAUGHHETEE, Jacob (University of South Dakota)

**Presenter:** Dr DAUGHHETEE, Jacob (University of South Dakota)

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