



Canadian Association  
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## **(I) nEXO: Searching for Lepton Number Violation and Majorana Neutrinos**

*Tuesday, June 20, 2023 1:45 PM (30 minutes)*

The nEXO experiment is a proposed next-generation liquid xenon detector to search for neutrino-less double beta decay ( $0\nu\beta\beta$ ) of  $^{136}\text{Xe}$ . The experiment will use a 5-tonne liquid xenon monolithic single-phase time projection chamber enriched to 90%  $^{136}\text{Xe}$ . Ionization electrons and scintillation photons from energy deposits in the Xe will be recorded by a segmented anode plane and a large SiPM array. This talk will present recent progress in the detector design, an improved modelling of signal readout and the development of a deep neural network based data analysis architecture to improve signal/background separation. These developments result in a 90% CL  $0\nu\beta\beta$  half-life sensitivity of  $1.35 \times 10^{28}$  yrs in 10 years of data taking.

### **Keyword-1**

Neutrinoless Double Beta Decay

### **Keyword-2**

Xenon

### **Keyword-3**

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