

Abstract Submitted  
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**Modeling the Effect of Impurities on the Electron Lifetime in Liquid Xenon for nEXO** AKO JAMIL, Yale University, NEXO COLLABORATION — nEXO is a 5 tonne liquid xenon (LXe) time projection chamber (TPC) planned to search for the neutrinoless double beta decay of  $^{136}\text{Xe}$  with a target half-life sensitivity of about  $10^{28}$  years. Electrons from an event within the TPC will be drifted up to 1.3 m and to ensure minimal charge loss nEXO aims to reach an electron lifetime of 10 ms. This lifetime is inversely proportional to the concentration of electro-negative impurities, for which multiple species with different attachment cross-sections may be important. Various sources for impurities such as diffusion out of commonly used plastics, desorption from metal surfaces and leaks to atmosphere were investigated. This talk will go over recent measurements of outgassing from plastics, cross-section measurements of impurities in LXe and the prospects of an empirically driven model for understanding the electron lifetime in LXe for nEXO.

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