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An Empirical Model of Electronegative Impurities for nEXO SAMUEL BORDEN, Yale University , NEXO COLLABORATION COLLABORATION — Neutrinoless double beta-decay is a hypothesized radioactive decay, that if observed, would prove that the neutrino is a Majorana particle. nEXO is a future tonne-scale liquid xenon (LXe) time projection chamber (TPC) designed to search for the neutrinoless double-beta decay of Xe-136. Future tonne-scale LXe TPCs such as nEXO will require electrons to be drifted over meter long distances while minimizing loss of charge during drift due to the capture of electrons by electronegative impurities within the LXe. We will present an empirical model for predicting the level of electronegative impurities in nEXO, based on measurements of outgassing of atmospheric gases from plastics and other detector materials. The model is validated using electron lifetime measurements from EXO-200 and dedicated small-scale setups.

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