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Liquid Xenon Purity Studies for nEXO MICHAEL JEWELL, Drexel Univ, ENRICHED XENON OBSERVATORY(EXO) COLLABORATION — The EXO collaboration is currently searching for neutrinoless double-beta decay using the scintillation and ionization response of a liquid xenon time projection chamber (TPC). To optimize the signal of such a detector, the xenon needs to be kept free of electronegative impurities which could interact with drifting electrons and limit energy resolution. The current 200kg prototype detector, EXO-200, achieves electron lifetimes above 1ms to limit charge attenuation. With the next generation ton scale detector nEXO, more stringent limits will be needed to achieve expected energy resolution. In addition there is a need for real-time monitoring to allow for timely response in the event that xenon purity begins to show signs of degradation. This talk will discuss research and development of new purity monitoring techniques that will directly measure electron lifetime in liquid xenon. The results of this research will have direct applications for nEXO as well as other large noble liquid detectors.

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