

Abstract Submitted
for the APR18 Meeting of
The American Physical Society

Simulating Liquid Noble Gas Purity Monitors PHILIP WEIGEL, ERIN HANSEN, MICHELLE DOLINSKI, Drexel University — Electron drift purity monitors are used to analyze the lifetimes of electrons in liquid noble gas detectors. A quantitative measure of electron lifetimes—and hence purity—is established by drifting a known number of free electrons through the liquid and collecting them on an anode. The work presented here is the development of simulations that provide information about electron drift times in noble gas purity monitors. In the case of xenon, the drift length of electrons is highly limited by cost of xenon. The addition of high voltage switching can be used to artificially increase the drift length of the chamber without increasing the required volume of xenon. These simulations provide a computational method for modeling the high voltage switching monitor and testing its ability to measure long electron lifetimes.

Philip Weigel
Drexel University

Date submitted: 12 Jan 2018

Electronic form version 1.4