

Abstract Submitted
for the TSF19 Meeting of
The American Physical Society

Purification System and Purity Measurements of Liquid Argon for Liquid Argon Time Projection Chambers¹ AKSHAT TRIPATHI, ILKER PARMAKSIZ, JONATHAN ASAADI, ZACHARY WILLIAMS, The University of Texas at Arlington — Liquid Argon Time Projection Chambers (LArTPCs) serve as a high resolution and high sensitivity detectors that are used to conduct neutrino experiments and dark matter searches. In order to achieve long drift times for electrons that are produced as a result of charged particle (created by a neutrino interaction) ionizing our volume of argon, we need to achieve purity levels of liquid argon (LAr) at an order of a few parts per trillion (ppt). To achieve these high purity levels, our purification system uses activated copper and molecular sieve granules to remove impurities such as oxygen and water, respectively, from LAr and by utilizing high powered resistors, it also boils the liquid furiously to recirculate argon in the system. We use the filter materials present to then regenerate the filter materials in situ by heating them at about 180oC and passing Ar-H mixture through them. In this work, we describe the construction and workings of a purification system and purity monitor used at The University of Texas at Arlington.

¹This work was supported by a grant from the US DOE

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Date submitted: 30 Sep 2019

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