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Nanofiltration of water-based liquid scintillator for future neutrino detectors STEVEN GARDINER, JUAN FRANCO, TEJAS SHARATH, ROBERT SVOBODA, Univ of California - Davis — The recent development of water-based liquid scintillator (WbLS) has generated significant interest among experimental neutrino physicists. A large-scale neutrino detector based on this material, such as the proposed THEIA experiment, would combine many of the advantages of existing water Cherenkov and oil-based scintillator detectors. In order to maintain the optical clarity of the WbLS in a large detector, one must recirculate the WbLS and remove impurities, such as metal ions, that accumulate over time. An important requirement for such a purification system is the ability to separate the organic scintillator molecules from the water and dissolved ions. The two separate streams may then be cleaned individually, remixed, and replaced in the detector. Our group has begun to investigate whether a commercially-available nanofiltration system could be used to separate WbLS organic molecules from water in a large neutrino detector. In this talk, we present results from our most recent nanofiltration tests and prospects for future WbLS nanofiltration efforts.

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