Abstract Submitted
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Wavelength Shifters and Interactions of EDTA with Acrylic & LAB[1] YUVRAJ MOHAN, University of Pennsylvania, SNO+ COLLABORATION — The SNO+ experiment, an upgrade to the Sudbury Neutrino Observatory, will use linear alkyl-benzene (LAB) liquid scintillator to probe new physics, including $0\nu\beta\beta$ decay. Event detection efficiency is heavily affected by radioactive backgrounds, two sources being Rn-222 and Po-210 daughters, some of which has become embedded in the SNO+ acrylic vessel after years underground. The leading candidate for polonium leaching is Ethylenediaminetetraacetic acid (EDTA). Before deployment on-site, EDTA's effects on the mechanical integrity of acrylic must be determined. It also must not be soluble in LAB or must be removed before scintillator fill of the vessel, as its presence would result in reduced light yield due to scattering. It was found that EDTA had negligible effects on the Young's Modulus of acrylic. EDTA is also slightly soluble in LAB, but can be completely removed by rinsing with water. Additionally, the study of the light yield and alpha/beta timing profiles of two wavelength shifters – bisMSB and perylene – is critical to determining which should be added to the $0\nu\beta\beta$ isotope (tellurium) LAB cocktail. Small-scale results hint that perylene might be better, but this is being confirmed with larger-scale tests.

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