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Development of an Organic Liquid Scintillation Detector to be Used for Measuring Muon-Induced Processes at Homestake BRIAN WOLTMAN, PATRICK DAVIS, Undergraduate Student, DONGMING MEI, Professor, CHAO ZHANG, Post-doc, CUBED COLLABORATION — Understanding the backgrounds produced by muon-induced processes is important to the success of experiments searching for rare event physics such as neutrinoless double-beta decay, dark matter, or neutrino oscillations, which require extremely low backgrounds. Measuring these muon-induced processes is vital for the low background experiments planned for Sanford Lab/DUSEL at the Homestake Mine in Lead, SD. We have constructed and calibrated a 12 liter liquid scintillation detector joined with two photomultiplier tubes (PMTs). We will present the construction and calibration of the detector, including its efficiency and neutron/gamma discrimination. We will also discuss the capabilities of our detector for use in low-background underground laboratories.

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