Abstract Submitted
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Basic Technologies for MiniLENS and LENS[1] STEVEN D. ROUNTREE, Virginia Tech, LENS COLLABORATION — This talk will cover key aspects of the LENS detector that will be tested by MiniLENS, an ∼100L indium loaded detector. The key aspects that will be tested in MiniLENS are the novel scintillation lattice (SL), the Indium loaded liquid scintillator (InLS) production and the background suppression techniques made viable the SL. In addition to background suppression, the *pp signal* will be tested by "proxy" events using muon pretagged (p,n) reactions which have the same post tag cascade as In115 (nu, e). LENS requires spatial resolution of ∼10cm to exploit the signature from neutrino capture on In115 and suppress the background due to In115 beta decay. To obtain this spatial resolution we have developed an optically segmented cubic lattice (the SL) of low index foils in a relatively high index scintillator. This system creates a pixilated light output on the sides of the detector which allows for digital event location instead of the usual time of flight method. LENS requires approximately 10 tons of Indium to be loaded into 100,000 L of organic scintillator, through liquid-liquid extraction. The key properties of the InLS are high metal loading (8-10%), long attenuation length at 430nm (>8m), high scintillation yield, stability on the scale of 5 years, and low environmental and health hazards in an underground ambience.

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