

Abstract Submitted
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Novel Scintillation Lattice for LENS Experiment STEVEN ROUNTREE, CHRISTIAN GRIEB, Virginia Tech, LENS COLLABORATION — LENS is a low energy neutrino experiment that will measure the solar neutrino spectrum above 114keV which accounts for >95% of the solar neutrino flux. It will allow us to measure the solar luminosity in neutrinos, test the current LMA-MSW oscillation model independently from solar models, probe the temperature profile of solar energy production, as well as search for sterile neutrino oscillations using an artificial neutrino source. The experimental tool is charged-current capture of the neutrino on In115, with prompt emission of an e- and delayed emission of 2 gamma rays that serve as a time/space coincidence tag. Spatial resolution of ~ 10 cm is required to exploit this signature and suppress the background due to In115 beta decay. Therefore, the detector will be optically segmented by a cubical lattice of low index foils or by an air gap between two foils. The low index layers cause total internal reflection and channel the scintillation light along the 3 main axes. This system creates a pixilated light output on the six sides of the detector which allows for digital event location instead of the usual time of flight method.

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