Abstract Submitted
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Projections for the LUX Dark Matter Experiment from LUX_0.1 Prototype Results DAVID MALLING, Brown University, LUX COLLABORATION — The LUX experiment will facilitate direct detection of Weakly Interacting Massive Particles (WIMPs) with a 350 kg liquid xenon TPC. LUX will be able to detect 100 GeV WIMPs with scalar cross-section as low as 7×10^{-46} cm^2, equivalent to $\sim$0.5 events/100 kg/month in a 100 kg inner fiducial volume. Background event rates $< 8 \times 10^{-4}$ events/keVee/kg/day are ensured with up to 99.9% electron-recoil rejection and 50% nuclear-recoil acceptance. Light collection from primary scintillation events is expected to reach $\sim$10 phe/keVee (ZF). Results from the LUX_0.1 prototype detector, including greatly enhanced light collection and high xenon purity, are very promising for LUX. All impurities resulting in the degradation of either electron drift lengths or photon mean free paths in liquid xenon are expected to be reduced to negligible levels. A further testing phase above ground at Sanford Lab in early 2010 will further investigate these results prior to underground deployment in mid-2010.

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