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Sensitivity and backgrounds for the LUX dark matter search PETER SORENSEN, Brown University, LUX COLLABORATION — The LUX 300 kg two-phase Xe detector aims to detect or exclude dark matter in the form of Weakly Interacting Massive Particles (WIMPs) with scalar cross section (per nucleon) as low as 7×10^{-46} cm^2. This is equivalent to $\sim$ 0.5 events/100 kg/month in a 100 kg fiducial volume. The LUX design is set to ensure $<$ 1 background event / 10 months live, which could potentially be characterized as a WIMP interaction. Based on above-ground calibrations and data from the XENON10 experiment, LUX expects to reject up to 99.9% of the dominant electron-recoil background at detector threshold ($\sim$ 4.5 keVr), with 50% acceptance for nuclear recoils. This level of electron recoil rejection power requires a gamma/beta background event rate of $< 8 \times 10^{-4}$ events/keVee/kg/day at threshold − a factor of $>$ 150 above the requisite nuclear recoil background rate. This talk will discuss projected backgrounds and sensitivity of the LUX experiment.

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