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The LUX Dark Matter Experiment and an Updated Analysis of Its First Results

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The Large Underground Xenon (LUX) experiment is working on the detection of dark matter particles through their possible weak interactions with heavy nuclei. LUX is a dual phase time projection chamber (TPC) filled with 350kg of liquid Xenon and located 5000 feet underground at the Sanford Underground Research Facility (SURF). It uses the ratio of the primary scintillation and secondary ionization signals from particle interactions with Xe nuclei to discriminate between electron-recoil backgrounds and nuclear-recoil WIMP signatures. In addition, the reconstructed three-dimensional position of these interactions and xenon's effective self-shielding is further used to suppress backgrounds originating from outside of the TPC. An overview of the LUX experiment will be presented here along with the updated results from a recent re-analysis of previously reported data using improved calibrations and data processing chain.

Oral or Poster Presentation

Oral

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