

Abstract Submitted
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Sub-GeV and other rare event searches with the LUX detector

LUCIE TVRZNIKOVA, Yale University, LUX COLLABORATION — The Large Underground Xenon (LUX) experiment was a two-phase liquid/gas xenon time projection chamber designed for the direct detection of potential dark matter candidate particles. LUX contained 250 kg of active liquid xenon and was installed 1.5 km underground from 2012 to 2016 at the Sanford Underground Research Facility in Lead, South Dakota (USA). LUX results include constraints on WIMP-nucleon spin dependent and independent couplings spanning a wide range of WIMP masses above a few GeV, as well as limits on Axions and Axion-Like Particles (ALPs). Direct detection of dark matter candidates with masses below the GeV scale is not possible for pure nuclear recoil signals due to the low signal yield of the nuclear recoil events. However, by considering the inelastic channel of photon emission from bremsstrahlung during the nuclear recoil, this limitation can be overcome. An overview of these various searches performed by the LUX detector will be presented.

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