38th INTERNATIONAL CONFERENCE
ON HIGH ENERGY PHYSICS
AUGUST 3 - 10, 2016
CHICAGO

Contribution ID: **1373** Type: **Oral Presentation**

The Present and Future of Searching for Dark Matter with LUX and LZ (20' + 5')

Saturday, 6 August 2016 15:15 (25 minutes)

The LUX collaboration has recently re-analyzed its initial 90 live-day WIMP search data. The new results advance the search for dark matter candidate particles in the 4 GeV/cˆ2 and higher mass range, with a maximal spin-independent sensitivity of 6 x 10ˆ-46 cmˆ2 cross-section for a mass of 33 GeV/cˆ2 now established. LUX has performed multiple advanced *in situ* neutron and beta/gamma calibrations of the light (charge) yields down to 1.1 (0.7) keV in nuclear recoil energy and 1.3 (0.2) keV in electron recoil energy, thereby bypassing the past practices of extrapolating the yields from *ex situ* calibrations or simulation models alone. In this talk, the consequences of the new calibrations for the limit on the cross-section of interaction for low-mass WIMPs will be highlighted. Previous hints of WIMP signals from other detectors are now more strongly disfavored, assuming isospin invariance and the standard halo model. Both spin-independent and spin-dependent limits will be discussed, as well as the present status of the LUX 300-live-day run, and the technical design report and future of its 10-ton-scale, next-generation successor LZ, which plans on achieving a sensitivity of better than 3 x 10ˆ-48 cmˆ2 for a WIMP of 40 GeV/cˆ2 rest mass.

Primary author: Prof. SZYDAGIS, Matthew (University at Albany, State University of New York)

Co-authors: COLLABORATION, LUX (SURF); COLLABORATION, LZ (SURF)

Presenter: Prof. SZYDAGIS, Matthew (University at Albany, State University of New York)

Session Classification: Dark Matter Detection

Track Classification: Dark Matter Detection