



ID de Contribution: 146

Type: Ordinary

## Recent results on dark matter searches from the LUX collaboration and status of the LZ experiment.

*vendredi 18 mars 2016 11:00 (15 minutes)*

The direct detection of dark matter –accounting for 85% of the mass content of the Universe –is one of the most important scientific missions of the 21st century and any discovery will provide an incontrovertible signature of physics beyond Standard Model. Weakly interacting massive particles (WIMPs) that arise naturally in several models are compelling candidates.

The LUX experiment is a liquid xenon time projection chamber (TPC), operating in the Davis Cavern of the Sanford Underground Research Facility (South Dakota, USA) at 1.5 km underground.

We present the re-analysis of the 2013 data sample. Exploiting several advances in the analysis tools, simulation and calibration, we set the most stringent constraint on spin-independent WIMP-nucleon interaction, improving the sensitivity to low-mass WIMPs compared to our previous results, and excluding cross section down to 0.6 zb at 90% CL for 33 GeV WIMP mass.

New constraints on spin-dependent WIMP-neutron and -proton cross sections based on the same data sample will be also presented.

The LUX-ZEPLIN experiment, to be located at the SURF facility after LUX data taking completion, is a next-generation instrument, featuring a 7-tonne active xenon TPC, surrounded by two outer detectors which can be used as veto systems for further background rejection. This makes LZ unique compared to its direct competitors. We present the status of the project and the physics reach.

**Auteur principal:** Dr BELTRAME, Paolo (University of Edinburgh)

**Orateur:** Dr BELTRAME, Paolo (University of Edinburgh)

**Classification de Session:** DM & Cosmology

**Classification de thématique:** Experiment