Contribution ID: **10** Type: **Parallel talk**

The first result from InDEx dark matter direct search experiment at JUSL

The InDEx (**In**dian **D**ark matter search **Ex**periment) is aimed to search the dark matter directly by the recoil nucleus formed due to the elastic scattering of WIMP with the nuclei of superheated droplet detector. The superheated droplet detector has been installed at Jaduguda Underground Science Laboratory (JUSL) at UCIL, Jaduguda mine, Jharkhand at 555m deep underground. The active liquid is tetra-fluoro-ethane (C2H2F4). The detectors have been fabricated at laboratory along with the FPGA based data acquisition systems. A feasibility study with C2H2F4 target shows that the detector is sensitive to sub-GeV mass of dark matter while operated at low threshold. The detector ran at JUSL for an effective period of 48.8 days with an exposure of 2.47 kg-days at 5.87 keV threshold. After fabrication, the calibration experiments were performed with the standard 241Am-Be radioactive source and with the neutrons generated by the (p,n) reactions at Cyclotron. The radiation backgrounds and the noise level at JUSL have been measured by different workers prior to the above run. The results show the upper limit on the spin-independent cross section as [6.655 + (+0.314 − 0.314)statistical + (+2.360 − 1.356)systematic] × 10−34 cm2 for the carbon at a WIMP mass of 15.83 GeV/c2. It shows the spin-dependent cross section as [1.137 + (+0.053 − 0.054)statistical + (+0.308−0.187)systematic]×10-37 cm2 for fluorine nuclei at 24.90 GeV/c2. The first result from InDEx at JUSL is reported in this abstract. The future run with larger exposure and lower thresholds are in progress.

Track type

Dark Matter

Author: DAS, Mala

Presenter: DAS, Mala

Session Classification: Plenary