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DarSide-50 the direct WIMP search with LAr TPC

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The DarkSide-50 is the dual phase Liquid Argon Time Projection Chamber (LAr TPC) based experiment, builded for the direct dark matter search which currently is taking data in the underground facility at Laboratori Nazionali del Gran Sasso (LNGS). The detector was assembled, tested and filled first with atmospheric Argon (in 2013) and took a successful two years run accumulating the exposure of ˜1420 kg d. In April of 2015 the detector was filled with low radioactivity Argon (depleted in Ar39) from the underground source in Colorado (Kinder Morgan co.) and it is in the WIMP search mode since then. The LAr TPC with an active mass of ˜46 kg is surrounded by the 30 tonne organic scintillator containing vessel equipped with 110 PMTs used as the neutron veto, which, in its turn, is placed inside the 1kton water Cerenkov detector equipped with 80 PMTs and used as the cosmic rays muons veto. The detailed description of all three detectors will be given together with the first WIMP search results from both: the AAr run with exposure of ˜1420 kg d as well as the UAr run with a ˜2000 kg d of exposure.

Presentation type

Section talk (10+5 min)

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