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Results form the first DarkSide-50 argon run

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DarkSide-50 (DS-50) at Gran Sasso underground laboratory, Italy, is a direct dark matter search experiment based on a TPC with liquid argon from underground sources. The DS-50 TPC, with 50 kg of active argon and a projected fiducial mass of >33 kg, is installed inside an active neutron veto based on a boron-loaded organic scintillator. The neutron veto is built inside a water cherenkov muon veto. DS-50 has been taking data since Nov 2013, collecting more than 2e7 events with atmospheric argon. This data represents an exposure to the largest background, beta decays of Ar-39, comparable to the full three-year run planned for DS-50 with underground argon. When analyzed with a threshold that would give a sensitivity in the full run of about 1e-45 cmˆ2 at a WIMP mass of 100 GeV/cˆ2, there is no Ar-39 background observed. The detector design and performance will be presented as well as results from the atmospheric argon run still in progress. Plans for the underground argon run and for a ton-scale detector within the same neutron veto vessel will be presented.*x000D*
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