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Light WIMP search with the NEWS-G experiment

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The NEWS-G experiment uses spherical proportional counters (SPC) to probe for low mass dark matter. An SPC is a metallic sphere filled with gas with a high-voltage anode at its centre producing a radial electric field. The interaction between a dark matter particle and a nucleus can cause ionization of the gas, which leads to an electron avalanche near the anode and a detectable signal.

The latest NEWS-G detector, S-140, is a copper sphere of 140 cm of diameter, which took 10 days of data with methane at the LSM, producing world-leading WIMP-proton spin-dependent limits. The detector is now taking data at SNOLAB with various gases including neon and helium. The LSM and SNOLAB campaigns have also shed light on new challenges to overcome in order to maximize the capabilities of the detector. This in turn led to the development of interesting new techniques in terms of characterization, discrimination and reduction of backgrounds.

This talk will describe the NEWS-G experiment, present the latest results from the LSM data and discuss the progress on data taking and analysis at SNOLAB.

Collaboration(s)

NEWS-G

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