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The NEWS-G light Dark Matter search experiment: Results of a methane gas physics campaign

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The NEWS-G direct dark matter search experiment uses spherical proportional counters (SPC) with light noble gasses to explore low WIMP masses. The current iteration of the experiment consists of a large 140 cm diameter SPC installed at SNOLAB with a new sensor design, and lots of improvements in detector performance and data quality. Before its installation at SNOLAB, the detector was operated with 135 mbar pure methane gas at the LSM, with a temporary water shield, offering a hydrogen-rich target and reduced backgrounds. We present results from a 10-day physics campaign in these conditions, including calibrations of the detector response down to the single ionization regime.

Collaboration name

NEWS-G

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