

Detection of low mass WIMPs with Spherical Proportional Counters

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NEWS-G (New Experiments With Spheres-Gas) is an experiment searching for dark matter using the Spherical Proportional Counter (SPC) technique. Such detectors can operate kg scale targets in meter sized spheres, while keeping single ionization electron detection sensitivity. They can be filled with low mass gases such as hydrogen, helium, and neon. NEWS-G aspires to extend the sensitivity of direct dark matter searches to the mass range from 0.1 GeV to few GeV, opening a window to non-standard model physics.

The talk will cover principle of operations of the SPC and a description of the 140cm diameter detector and compact shielding, with projected WIMP detection sensitivity. Preliminary results obtained with a temporary shield at the underground laboratory of Modane (LSM, France) with neon and methane as target gases will be presented. Installation is ongoing in SNOLAB (Canada) and commissioning is expected in April 2020. Very early results might be included in this talk.

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