



Contribution ID: 105

Type: Oral Presentations

## NEWS-G: Detection of low mass WIMPs with Spherical Proportional Counters

*Wednesday, 6 September 2023 17:00 (20 minutes)*

NEWS-G is an experiment searching for dark matter using the Spherical Proportional Counter (SPC) technique. Such detectors can operate significant mass of target, of order of kgs with meter size spheres, while keeping single ionization electron detection sensitivity. They can be filled with gaseous targets of low atomic mass such as hydrogen, helium, and neon, giving sensitivity to low mass WIMPs down to  $O(0.1\text{GeV})$ . Using multiple target gases, the detector can characterise unexpected backgrounds and systematic effects.

The talk will cover principle of operations of the SPC and a description of the 140cm diameter detector and compact shielding, installed in the SNOLAB underground facility. The latest WIMP limits obtained with a temporary shield at the underground laboratory of Modane (LSM, France) with methane as target gases will be presented. Preliminary results from the full detector at SNOLAB with additional gas mixtures will also be shown.

The talk will also introduce projects to improve the SPC performance, and expand their reach to coherent elastic neutrino-nucleus scattering (CEvNS).

Another contribution to this conference describes calibration of the ionisation yield from nuclear recoils using smaller SPCs.

**Primary author:** GROS, Philippe (Queen's University)

**Presenter:** GROS, Philippe (Queen's University)

**Session Classification:** E4