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Philippe Gros (Queen's U., Kingston, Canada): NEWS-G: search for low-mass WIMPS with Spherical Proportional Counters

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NEWS-G (New Experiments With Spheres-Gas) is a direct dark matter detection experiment using Spherical Proportional Counters (SPCs). It uses light noble gases to search for Weakly Interacting Massive Particles (WIMPs) down to the sub-GeV/c² mass region. The NEWS-G project builds on the experience gathered with the SEDINE detector, a 60cm SPC which has been operating for several years at the Laboratoire Souterrain de Modane (France). The NEWS-G collaboration is currently building a 140cm diameter SPC using low activity materials, that will be deployed at SNOLAB (Canada).

In this presentation, I will introduce the concept of SPC.

I will report the excellent results obtained with the SEDINE prototype with Ne as target nuclei, which exclude at 90% confidence level (C.L.) cross-sections above $4.4 \times 10^{-37} \text{ cm}^2$ for a 0.5GeV/c² WIMP.

I will finally describe the NEWS-G detector whose construction is ongoing for a deployment at SNOLAB planned in the summer of 2018.

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