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Recent progress in the search for light WIMP-like particles in southern Argentina at the DMSQUARE experiment

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The recent development of highly sensitive solid-state detectors has made it possible to search for light WIMP-like particles with only a few eV of deposited energy. Skipper CCDs allow us to resolve single-electron events, bringing the energy threshold down to 1.2 eV. In addition, some dark matter models predict a diurnal modulation in the DM particle flux. For certain parameters, this modulation is enhanced in the southern hemisphere due to the fact that the DM wind comes from 40 degrees north. The DMSQUARE experiment aims to probe this region of the parameter space using a Skipper CCD detector in Bariloche, southern Argentina. This experiment, using a 100 mg prototype detector, has already improved the previous limits for such models, obtained with a surface detector, by taking advantage of the modulation search. Recently, DMSQUARE has acquired data with a 2 g prototype detector, which is being moved to a shallow underground site (Sierra Grande mine, 1000 mwe). Data from the new detector will be presented.

Submitted on behalf of a Collaboration?

Yes

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