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The DAMIC-M experiment: status and first results

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The DAMIC-M experiment employs thick, fully depleted silicon charge-coupled devices (CCDs) to search for sub-GeV dark matter particles. Thanks to its multiple non-destructive measurements of the pixel charge, DAMIC-M skipper CCDs achieve single-ionization charge resolution and an energy threshold in the eV-scale. We report on the progress of the experiment and first results from prototype detectors installed underground at the Laboratoire Souterrain de Modane. In particular, constraints on dark matter particles interacting with electrons are obtained in a mass range between 0.5 and 1000 MeV. We also present results of a search for diurnal modulation in the measured single-ionization charge rate which significantly improves sensitivity at the lowest masses.

Submitted on behalf of a Collaboration?

Yes

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