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## **Search for low mass WIMP dark matter with DarkSide**

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Dark matter lighter than  $10 \text{ GeV}/c^2$  encompasses a promising range of candidates. The new analysis of the entire dataset acquired with a low-radioactivity argon target by the DarkSide-50 experiment at LNGS is presented. The new analysis benefits from more accurate calibration of the detector response, improved background model, and better determination of systematic uncertainties. A conceptual design for a new detector, DarkSide-LowMass, is proposed, based on the DarkSide-50 detector results, optimized for a low-threshold electron-counting measurement. Sensitivity to light dark matter is explored for various potential energy thresholds and background rates. The studies show that DarkSide-LowMass can achieve sensitivity to light dark matter down to the solar neutrino floor for GeV-scale masses.

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