

Novel limits on solar reflected dark matter with XENONnT

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The XENONnT experiment is a low-background dual phase liquid xenon Time Projection Chamber (TPC) with 5.9 tonnes of instrumented liquid xenon. Improved liquid xenon purification and radon distillation system along with various background mitigation strategies brought the electronic recoil backgrounds down to an unprecedented low of (15.8 ± 1.3) events/(keV \cdot t \cdot y) below recoil energies of 30 keV. Low-energy electronic recoil data corresponding to an exposure of 1.16 tonne-years is used to search for a signal of sub-GeV dark matter boosted by reflection off the sun. We observe no excess in the (1, 140) keV search region and report novel stringent upper limits on the dark matter-electron scattering cross section in the dark matter mass range between 10 keV and 9 MeV.

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