

Abstract Submitted
for the APR20 Meeting of
The American Physical Society

Light Dark Matter Search in XENON1T FEI GAO, KNUT MORÅ,
Columbia Univ, XENON COLLABORATION — Liquid xenon detectors are leading the direct search for dark matter (DM) at masses above 5 GeV thanks to excellent background discrimination power, using scintillation and ionization signals. However, requiring a scintillation signal results in a relatively high energy threshold, which limits the sensitivity to low-energy recoils from light DM. In this talk, we report results from a search for light DM signals using only the ionisation signal in the XENON1T detector. Strong event selections were developed to mitigate instrumental backgrounds, reaching ~ 20 events/(tonne \cdot day \cdot keVee) at 0.2 keVee. The selected data improves on current limits for DM-nucleus scattering at DM masses within 3 – 6 GeV. When electronic recoils induced by the Migdal effect are considered, constraints can be extended to DM masses as low as 85 MeV.

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Date submitted: 09 Jan 2020

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