

Abstract Submitted
for the APR20 Meeting of
The American Physical Society

Direct Detection Signatures of a Solar Dark Matter Halo TIMOTHY WISER, NOAH ANDERSON, ANGELINA PARTENHEIMER, Truman State Univ — While conventional direct detection experiments target the known dark matter population in the Galactic halo, a population bound to the Solar System is not excluded and would have distinct observational signatures. A Solar halo could be populated by adiabatic contraction of a small initial abundance in the protosolar nebula. We investigate the longevity of such a population with respect to gravitational perturbations from Jupiter and Earth and find that, unlike standard WIMPs, ultralight candidates such as axions or dark photons could survive for the age of the Solar System in Earth-crossing orbits. The low velocity dispersion in Solar orbit suggests that resonant detection experiments (such as ADMX) could find distinct, and potentially enhanced, signals of such a population.

Timothy Wiser
Truman State Univ

Date submitted: 08 Jan 2020

Electronic form version 1.4