

Abstract Submitted
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Limits on GeV-scale Exotic Isotopes and constraints on Dark Matter GLENNYS FARRAR, New York Univ NYU, JOHN EILER, Caltech, XINGCHEN XU, New York University, GLENNYS FARRAR TEAM — Dark Matter with an attractive Yukawa coupling to nucleons, at a level allowed by Direct Detection and CMB experiments, can bind to nuclei in Earth. Sexaquark DM (SDM), is an example of this type of scenario. With an expected mass ~ 1.8 -2 GeV, binding would lead to formation of exotic isotopes with masses having the very challenging mass offset of $O(2)$ amu from standard isotopes. Predictions for abundances vary dramatically with the Yukawa coupling, due to possible resonant (and anti-resonant) DM-nuclei interactions, moreover geochemistry of residence times is in not all cases well-known, making a theoretical interpretation challenging as well. In this talk, we report results of a recent dedicated laboratory geochemical and accelerator-mass-spectrometer search for exotic isotopes of noble gases and Oxygen, having unprecedented sensitivity in this only-now-explored mass range. The implications for the SDM scenario will be discussed.

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