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Sexaquark Dark Matter: Experimental Constraints, Exotic Isotopes and Radiative Capture XINGCHEN XU, GLENNYS FARRAR, New York Univ NYU — In the Sexaquark Dark Matter scenario, DM is composed of six quarks (uuddss) and interacts with baryons by meson exchange. The SDM-baryon interaction is non-perturbative in much of the natural parameter space and the cross section exhibits resonant behavior which cannot be described by Born approximation. We re-evaluate the possible SDM parameter space, imposing constraints from XQC, CMB and dewar experiments. Because there is no one-to-one mapping between the parameters and the cross section and the scaling of cross section with the atomic mass is model dependent, it is non-trivial to compare different experiments universally in the DM-nucleon cross section vs. DM mass plane. We demonstrate how this comparison is possible in this talk. If the interaction between SDM and baryon is attractive, SDM can be captured by nucleus and form exotic isotopes, generating photon radiation signal if captured in an excited state. The capture cross section is also highly resonant. We evaluated the abundance of the isotopes in the Earth and possible capture signal in experiments like the XQC.

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