

Quark Nugget Dark Matter: hunter's guide

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Dark matter particles may be represented by compact composite objects of quark matter with macroscopic parameters of mass, charge and effective temperature. Such particles remain cosmologically and observationally dark if they possess a small cross section to mass ratio. A new feature of the Quark Nugget dark matter model is the prediction of existence of anti-quark nuggets (anti-QNs) built of antimatter and, thus, strongly interacting with visible matter. We study various types of radiation which such anti-QNs can produce, including thermal radiation and gamma photons from matter-antimatter annihilation. Assuming that these particles constitute the dominant dark matter fraction in our galaxy, we then estimate their radiation in our galaxy and compare it with various satellite and terrestrial observations. New detection approaches of this type of dark matter are proposed.

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