Particle Physics Challenges



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On Dark Matter Accretion in Neutron Stars

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If Dark Matter (DM) interacts with nucleons and/or electrons it can be trapped in celestial bodies. For a Neutron Star (NS), DM accumulating in the center could form a core which could further gravitationally collapse into a black hole. The requirement that such collapses do not occur gives constraints on the DM mass and interactions. Such phenomena crucially depends on the amount of DM that can accumulate in NS. In this talk, we re-evaluate in detail the maximum amount of DM that could be accumulated in NS by carefully considering the fact that neutrons form a highly degenerate fermi plasma. We find that for asymmetric bosonic DM, for masses below 1 GeV constraints are significantly smaller than previously obtained in the literature.

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