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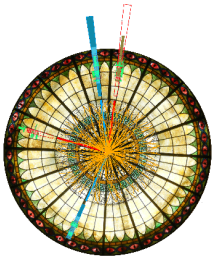

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On the annihilation rate of WIMPs

Wednesday, 29 April 2015 11:50 (18 minutes)

We systematically compute the annihilation rate for neutral winos into the final state $\gamma + X$, including all leading radiative corrections. This includes both the Sommerfeld enhancement (in the decoupling limit for the Higgsino) and the resummation of the leading electroweak double logarithms. Adopting an analysis of the HESS experiment, we place constraints on the mass as a function of the wino fraction of the dark matter and the shape of the dark matter profile. We also determine how much coring is needed in the dark matter halo to make the wino a viable candidate as a function of its mass. Additionally, as part of our effective field theory formalism, we show that in the pure-Standard Model sector of our theory, emissions of soft Higgses are power-suppressed and that collinear Higgs emission does not contribute to leading double logs.

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