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How dark matter cares about topological superstrings

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Non-trivial toplogical properties of string world sheets with three boundaries can give rise to superpotentials which preserve supersymmetry but violate R-symmetry by two units. This results in four point functions which permit s-wave annihilation of two neutralinos into gauge bosons. If the topological partition function is such as to allow saturation of the WMAP dark matter density for low string scales (M_s \sim 2 TeV), the annihilation into monochromatic gamma rays is predicted to lie about a factor of 2 below the current H.E.S.S. measurement of gamma ray flux from the galactic center. Thus, it may be detectable in the next round of gamma ray observations.

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