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Decaying Dark Matter from Dark Instantons

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We construct an explicit, TeV-scale model of decaying dark matter in which the approximate stability of the dark matter candidate is a consequence of a global symmetry that is broken only by instanton-induced operators generated by a non-Abelian dark gauge group. The dominant dark matter decay channels are to standard model leptons. Annihilation of the dark matter to standard model states occurs primarily through the Higgs portal. We show that the mass and lifetime of the dark matter candidate in this model can be chosen to be consistent with the values favored by fits to data from the PAMELA and Fermi LAT experiments.

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