

## Dark matter constraints from 14 years of Fermi data

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I present constraints on various dark matter models from the analysis of 14 years of Fermi data, including thermal higgsino dark matter. This scenario is well-motivated from supersymmetric extension of the Standard Model. We analyze Fermi data near the Galactic Center in search for continuum gamma-ray emission that may occur from the annihilation of higgsino DM through the  $W+W-$  and  $Z Z$  final states. While we set the strongest constraint to-date on higgsino-like DM, we also find a modest excess that we show could be consistent with the expected higgsino signal. In addition, we consider the scenario in which DM may annihilate or decay to photons, producing monochromatic gamma-rays. We search for such signals in Fermi data, and present constraints as strong as  $\langle \sigma v \rangle$

$\lesssim 6 \times 10^{-30} \text{ cm}^3/\text{s}$  for two-to-two annihilations and  $\tau$

$\gtrsim 10^{30} \text{ s}$  for one-to-two decays, representing leading sensitivity between 10 GeV and  $\sim 500$  GeV. These constraints place non-trivial restrictions on models that address the Fermi Galactic Center Excess; for example, we disfavor Higgs portal explanations of the excess.

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