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Constraints on the Dark Sector from Electroweak Precision Observables

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The dark photon is a popular choice when considering a portal between the Standard Model and the dark sector. In this work, we revisit the exclusion constraints on the dark photon, using the latest electroweak precision data from the Particle Data Group, and explore the impact on these constraints due to the CDF measurement of the W boson mass. In addition, we set upper bounds directly on dark photon couplings to dark matter particles, focusing on Dirac fermion and scalar scenarios. We also extend relic abundance constraints into the heavy mass region, and identify regions of parameter space that are consistent with both electroweak and dark matter density constraints.

Secondary track

T09 - Beyond the Standard Model

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