

Abstract Submitted
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Direct Detection and LHC Limits on Effective WIMP Dark Matter JEFFREY HUTCHINSON, Florida Gulf Coast University, KARA FARNSWORTH, Institute of Physics, Czech Academy of Science — We analyze the current limits on dark matter candidates from the 36 fb^{-1} jets + missing transverse momentum ATLAS search and various direct detection searches in the context of minimal extensions to the standard model with thermal relic dark matter. These models, we refer to as Effective WIMPs, contain a gauge singlet dark matter particle with cubic renormalizable couplings between quarks and "partner" particles with the same gauge quantum numbers as quarks. Within this framework, we consider six models where the dark matter is a scalar boson, fermion, or vector boson, and may or may not be its own antiparticle. We find significantly stronger collider limits on these models compared to the squark pair production simplified model primarily due to the variation in the coupling constant that we require to produce the correct relic abundance over all masses. Direct detection limits vary significantly between the models in the Effective WIMP framework but generally complement collider searches by ruling out regions of parameter space where collider searches are less effective.

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