

## SO(10) Dark Matter Models

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There are several reasons supersymmetric models are appealing as a candidate for beyond the standard models physics. These include help with gauge coupling unification, the gauge hierarchy problem, the stabilization of the electroweak vacuum, radiative electroweak symmetry breaking, dark matter, and perhaps an improvement to low energy phenomenology.

The lack of evidence for low energy supersymmetry at the LHC implies a supersymmetry scale in excess a TeV. While this is consistent (and even helpful) with a Higgs boson mass at  $\approx 125$  GeV, simple supersymmetric models with scalar and gaugino mass universality are being pushed into strips of parameter space. In contrast, non-supersymmetric grand unified theories such as SO(10) may provide equivalent benefits to all of the above issues normally associated with supersymmetry, including a dark matter candidate. Because of the presence of an intermediate scale, these theories may unify gauge couplings, provide for neutrino masses and a suitably long lived proton. The construction of SO(10) dark matter models will be discussed.

### Summary

### Based on (arXiv number)

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