SUSY07



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SUSY Multi-Step Unification without Doublet-Triplet Splitting

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Matter-Higgs unification in string-inspired supersymmetric Grand Unified Theories predicts the existence of colored states in the Higgs multiplets and calls for two extra generations of Higgs-like fields ('unhiggses'). If these states are present near the TeV scale, gauge-coupling unification points to the existence of two distinct scales, 10°15 GeV where right-handed neutrinos and a Pati-Salam symmetry appear, and 10°18 GeV where complete unification is achieved. Baryon-number conservation, while not guaranteed, can naturally emerge from an underlying flavor symmetry. Collider signatures and dark-matter physics may be drastically different from the conventional MSSM.

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