The MSSM with GUT-scale degenerate Higgs masses

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An interesting class of UV completions of the MSSM gives rise to a specific structure of the Higgs mass matrix. Namely, in such models the diagonal and off-diagonal Higgs mass parameters are degenerate at the GUT scale. We explain the origins of this structure from higher dimensions, and we discuss some examples. We also present a numerical study of the phenomenological prospects of such models: By imposing Higgs mass degeneracy as a GUT-scale boundary condition for the RG evolution of the MSSM parameters, we can confront the emerging low-energy phenomenology with present experimental constraints.

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