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Asymptotically Free Supersymmetric Twin Higgs

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Twin Higgs (TH) models explain the absence of new colored particles responsible for natural electroweak symmetry breaking. All known ultraviolet completions of TH models require some non-perturbative dynamics below the Planck scale. A new type of supersymmetric Twin Higgs model is presented in which the TH mechanism is introduced by a new asymptotically free gauge symmetry. The model features natural electroweak symmetry breaking for squarks and gluino heavier than 2 TeV even if supersymmetry breaking is mediated around the Planck scale, and has interesting flavor phenomenology including the top quark decay into the Higgs and the up quark which may be discovered at the LHC. The talk will be primarly based on arXiv:1707.09071 and arXiv:1711.11040.

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