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A Naturally Attractive Supermodel

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Abstract:

We propose an attractor mechanism which generates the ‘more minimal’ supersymmetric standard model from a broad class of supersymmetry breaking boundary conditions. The hierarchies in the fermion masses and mixings are produced by the same dynamics and a natural weak scale results from gaugino mediation. These features arise from augmenting the standard model with a new $SU(3)$ gauge group under which only the third generation quarks are charged. The theory flows to a strongly interacting fixed point which induces a negative anomalous dimension for the third generation quarks and a positive anomalous dimension for the Higgs. As a result, a split-family natural spectrum and the flavor hierarchies are dynamically generated.

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