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New perspectives in Gravity Mediated SUSY Breaking: New contributions to the Higgs sector

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I will present a model related to a new class of solutions in gravity-mediated supersymmetry breaking. This class of solutions involves a new sector which may help to reduce the fine tuning of the Higgs boson mass. New supersymmetry breaking terms are generated corresponding to soft breaking terms and new hard breaking terms that are Planck-suppressed but may be sizable and contribute to the Higgs boson mass. Since these models involve singlets, they are naturally related to singlet-extensions of the MSSM, such as the NMSSM. We construct a two-singlet extension of the MSSM, called S2MSSM, assuming this new class of solutions. The order of magnitude of the one-loop contribution to the Higgs boson mass is studied. The new tree-level structure is also investigated.

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