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Relatively Heavy Higgs Boson in More Generic Gauge Mediation

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We discuss gauge mediation models where the doublet messengers and Higgs doublets are allowed to mix through a “charged” coupling. The charged coupling replaces messenger parity as a means of suppressing flavor changing neutral currents without introducing any unwanted CP violation. As a result of this mixing between the Higgs doublets and the messengers, relatively large A -terms are generated at the messenger scale. These large A -terms produce a distinct weak scale mass spectrum. Particularly, we show that the lightest Higgs boson mass is enhanced and can be as heavy as 125 eV for a gluino mass as light as 2TeV. We also show that the stops are heavier than that predicted by conventional gauge mediation models. It is also shown that these models have a peculiar slepton mass spectrum.

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