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Higgs boson Mass in GMSB with Messenger-Matter mixing ABDELHAMID ALBAID, Wichita State University, KALADI BABU, Oklahoma State University — A Higgs-like particle of order 125 GeV has been observed by both ATLAS and CMS experiments. In simple version of minimal GMSB models, this Higgs mass causes sparticle masses in the several to multi-TeV range in the simple version of minimal GMSB models. We consider the effects of messenger-matter mixing on the lightest CP-even Higgs boson mass in gauge-mediated supersymmetry breaking models. We find with such mixings a 125 GeV Higgs boson can be naturally obtained even with a sub-TeV SUSY spectrum, and when the gravitino has a cosmologically preferred sub-keV mass. In addition, when these models are embedded into a grand unification framework with a $U(1)$ flavor symmetry they explain the fermion mass hierarchy and generate naturally large neutrino mixing angles accompanied with small quark mixing angles. While SUSY mediated flavor changing processes are sufficiently suppressed in such an embedding, it can resolve the apparent discrepancy in the CP asymmetry parameters $\sin 2\beta$ and ϵ_K , and it predicts an observable $\mu \rightarrow e\gamma$ decay rate.

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