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The Mu problem and a non standard Higgs spectrum

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We discuss the generation of the Mu-term in a class of supersymmetric models characterized by a low energy effective superpotential containing a Lambda S H1 H2 term with a large coupling Lambda. In particular we discuss a specific example where the superpotential has no dimensionful parameters, pointing out the relation between the generated Mu-term and the mass of the lightest Higgs boson. We find that the generation of a phenomenologically viable Mu-term fits very well with a heavy lightest Higgs boson and a low degree of fine-tuning. Such a heavy lightest Higgs boson is still compatible with the bounds coming from the LHC since it decays mainly to two pseudoscalars or to two nightest neutralinos. We discuss the main signatures of the model for the LHC and future WIMP searches.

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