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The supersymmetric Higgs sector with four doublets and its decoupling property

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We consider extended Higgs sectors in SUSY SM in which extra chiral superfields are introduced to the MSSM. In such extended models, deviations from the MSSM can remain in predictions of several Higgs measurements by the non-decoupling effect, even if the extra scalars are all heavy. It is interesting to see the property of such non-decoupling effects in various model. In this talk, we focus on the SUSY SM with extra doublets. This model is a typical example of models where the Higgs potential does not receive the F-term contributions. This type of model can be reduced to the MSSM in the heavy extra fields limit. Such a deviation from the MSSM prediction can be tested at the ILC by precise measurements of the Higgs sector. This talk is based on the following work: M. Aoki, S. Kanemura, T. Shindou, and K. Yagyu, JHEP 1111 (2011) 038.

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