

## Charged Higgs Boson Pair Production via Gluon-Gluon Collisions in MSSM with CP Violation

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**Abstract:** The CP-violating effects to the subprocess  $gg \rightarrow H^+H^-$  are studied in the mSUGRA scenario at the CERN large hadron collider, by taking into account the experimental bounds of electron and neutron electric dipole moments. The CP-violating effects in this process are related to the complex phases of  $\mu$  and  $A_f$  in the mSUGRA scenario. In our calculation we consider small CP phases of  $\mu$  and  $A_f$  and neglect the effects of neutral Higgs boson mixing. In this case the CP effects to the process mainly come from the complex couplings of Higgs-squark-squark. We find a strong dependence of charged Higgs boson pair production rate on the complex couplings in the parameter space of minimal supersymmetric standard model.

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Key words: charged Higgs boson, MSSM, CP violation

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