

Collider and GW complementarity in the 2HDM

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We study electroweak phase transition and resultant GWs of a CP conserving 2HDM with a softly broken Z_2 symmetry. We analysed the parameter space of both type I and type II 2hdm without relying on any decoupling limit. We observe $M_{H^\pm} \approx M_H$ or $M_{H^\pm} \approx M_A$ favours SFOEWPT in 2HDM. In addition to di-Higgs production, scalar to fermion decay channel is also important to probe phase transition behaviour in 2HDM. We also comment about the shape of potential leading to SFOEWPT in 2hdm.

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