



# CP Phases in 2HDM and Effective Potential: A Geometrical View

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Using a geometric description of 2HDM, we classify CP invariants into three independent sectors such as scalar potential, Yukawa interaction and CKM matrix. Thermal effective potential of 2HDM is calculated in a basis invariant way. It is shown that the CP violation in Yukawa interactions can contribute to effective potential at one loop level but the CP phase in the CKM matrix cannot leak to effective potential at all orders. In the 2HDM with a softly broken  $Z_2$  symmetry, the leading thermal correction tends to restore the CP symmetry at high temperature.

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