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## CP-violation in the complex singlet extension of 2HDM

We explore the possibility of CP-violation in the complex-singlet extension of 2HDM. The addition of complex singlet paves the way for additional sources of CP-violation compared to 2HDM. If a  $Z_2$ -symmetry is imposed on the complex-singlet, such a model can accommodate a dark matter candidate as well. We identify the regions of parameter space, that can fit DM observables and at the same time generate sufficient CP-violation. The amount of CP-violation gets severely constrained from electric-dipole moment (EDM) experiments, which we take into account. In addition, we examine the impact of other theoretical and experimental constraints. Finally, we probe the CP-violation in this model at present and future collider experiments.

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