Scalars 2015

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CP violation in the extended Standard Model with a complex singlet

Content :

We construct the scalar potential of the Standard Model with an additional singlet scalar field (SMS), assuming an exact Z2 symmetry, where the singlet is Z2-even. To simplify the model we use a softly broken U(1) symmetry, which allows a reduction of the number of free parameters in the potential. Additional CP violating phase can appear if a complex singlet with a non-zero vacuum expectation value is added to the scalar sector of the SM. We study the masses of scalar particles, gauge couplings and fermionic sector.

Primary authors : Mrs. DARVISHI, Neda (University of Warsaw)

Co-authors :

Presenter : Mrs. DARVISHI, Neda (University of Warsaw)

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