

CP violation phase in BSM amplitudes

Firstly we define a *CP* violation phase ξ to quantify the mixture of *CP*-even and *CP*-odd states for Higgs boson in new physics beyond Standard Model.
Then we show it explicitly in $H \rightarrow \gamma\gamma$, $H \rightarrow \gamma\ell\ell$ and $H \rightarrow 4\ell$ amplitudes.
The analytical form gives a good explanation why the *CP*-violation phase could be observed in $H \rightarrow 4\ell$ process but not in $H \rightarrow \gamma\gamma$ and $H \rightarrow \gamma\ell\ell$ processes.
Meanwhile, to study the relations of amplitudes, we find a new method of decomposing $H \rightarrow \gamma\ell\ell$ and $H \rightarrow 4\ell$ amplitudes into $H \rightarrow \gamma\gamma$ amplitudes.
For a comparison, by using the on-shell approach we study the recursion relations of amplitudes and get a consistent result independently.

Presentation type

Oral

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