

CP violation tests of hyperon-antihyperon pairs at BESIII

Monday, 6 June 2022 10:00 (25 minutes)

The hyperons are produced with a non-zero spin polarization that is straight-forward to parameterize in processes involving virtual photons or vector mesons, enable direct and precise CP violation tests.

These CP tests can be performed on e.g. $J/\psi \rightarrow \Lambda \bar{\Lambda}$, $J/\psi \rightarrow \Sigma \bar{\Sigma}$, $J/\psi \rightarrow \Xi \bar{\Xi}$ and $\psi(2S) \rightarrow \Omega \bar{\Omega}$. For the $\Xi \rightarrow \Lambda \pi$ decay the exclusive measurement of the final state particles allows for three independent CP tests and the determination of the strong and weak phase differences. Thanks to the large datasets in the tau-mass region, including the world's largest data samples at the J/ψ and $\psi(2S)$ resonances collected at the BESIII experiment, the multi-dimensional analyses making use of polarization and entanglement have been performed for these processes. In the presentation an outline of the methods and recent results achieved at BESIII will be discussed.

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