

Measurement of CP violation of neutral kaon system at the Super Tau-Charm Factory

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In this paper, we present a preliminary study of CP violation effect of $K^0 - \bar{K}^0$ system in J/ψ decay. The CP violation parameters η_{+-} and η_{00} as well as their corresponding phase ϕ_{+-} and ϕ_{00} can be determined by the difference of the time-dependent decay rates between K^0 and \bar{K}^0 produced from $J/\psi \rightarrow K^- \pi^+ K^0 + c.c.$ processes. We investigate the precisions of the measurements of the CP violation effect at the Super Tau-Charm Factory(STCF), a e^+e^- collider with a peak luminosity of $10^{35} \text{ cm}^{-2}\text{s}^{-1}$. The parameters η_{+-} and its phase ϕ_{+-} can be measured at a relative precision of 1×10^{-3} , which the statistical accuracy will be several times better than that of the existing PDG average values.

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