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CP asymmetries in □ ⟶ □_□ □ □_□ decays

The τ lepton is the only known lepton massive enough to decay into hadrons. Besides serving as a clean laboratory for studying various low-energy aspects of the strong interactions, the hadronic τ decays may also allow us to explore CP-violating effects both within and beyond the SM. In this talk, I will discuss the CP asymmetries in $\tau \to K_S\pi\nu_\tau$ decays, which arise due to the CP violation in $K^0 - \bar{K}^0$ mixing within the SM. Within a generic effective field theory framework, I will then discuss the CP asymmetries induced by the beyond-the-SM four-fermion operators up to dimension-6. Interesting observations as well as the correlations among different observables will be presented. These studies are relevant to the Belle II experiment as well as the proposed Tera-Z and STCF facilities.

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