



Contribution ID: 142

Type: Parallel Session Talk

Extracting CP violation and strong phase in D decays by using quantum correlations in $\psi(3770) \rightarrow D^0 D^0\bar{0}$ and $\psi(3770) \rightarrow D^0 D^0\bar{0} \rightarrow (V_1 V_2)(K \pi)$

Friday 23 July 2010 17:45 (13 minutes)

The charm quark offers interesting opportunities to cross-check the mechanism of CP violation precisely tested in the strange and beauty sectors. In this paper, we exploit the angular and quantum correlations in the $D \bar{D}$ pairs produced through the decay of the $\psi(3770)$ resonance in a charm factory to investigate CP-violation in two different ways. We build CP-violating observables in $\psi(3770) \rightarrow D \bar{D} \rightarrow (V_1 V_2)(V_3 V_4)$ to isolate specific New Physics effects in the charm sector. We also consider the case of $\psi(3770) \rightarrow D \bar{D} \rightarrow (V_1 V_2)(K \pi)$ decays, which provide a new way to measure the strong phase difference δ between Cabibbo-favoured and doubly-Cabibbo suppressed D decays required in the determination of the CKM angle γ . Neglecting the systematics, we give a first rough estimate of the sensitivities of these measurements at BES-III with an integrated luminosity of 20 fb^{-1} at $\psi(3770)$ peak and at a future Super tau-charm factory with a luminosity of $10^{35} \text{ cm}^{-2} \text{ s}^{-1}$.

Primary author: KANG, Xian-Wei (IHEP,China)

Co-authors: LU, Gong-Ru (Department of physics,Henan normal univ.China); LI, Hai-Bo (IHEP,China); CHARLES, Jerome (Centre de Physique Th\u00e9oriqueUniv. Aix-Marseille 1 \& 2 and Sud Toulon-Var (UMR 6207)); DESCOTES-GENON, Sebastien (LPT,Orsay)

Presenter: KANG, Xian-Wei (IHEP,China)

Session Classification: 06 - CP violation, CKM and Rare Decays

Track Classification: 06 - CP violation, CKM and Rare Decays