



Contribution ID: 246

Type: Poster

Measurement of time-integrated raw asymmetry in $D^0 \rightarrow K^+ K^-$

Monday 12 December 2022 14:00 (1 hour)

The decay $D^0 \rightarrow K_s K_s$ is a singly Cabibbo-suppressed transition that involves the interference between $c\bar{u} \rightarrow s\bar{s}$ and $c\bar{u} \rightarrow d\bar{d}$ amplitudes, mediated by the exchange of a W boson at the tree level, that can generate CP asymmetries at the 1% level, even if the Cabibbo-Kobayashi-Maskawa phase is the only source of CP. Current experimental measurements of the CP asymmetry in $D^0 \rightarrow K_s K_s$ decays are still limited by the statistical precision, with the best measurement performed by Belle experiment using data at an integrated luminosity of 921 fb^{-1} : $A_{\text{CP}}(D^0 \rightarrow K_s K_s) = (-0.02 \pm 1.53 \pm 0.02 \pm 0.17)$, where the first uncertainty is statistical, the second systematic and the third due to the CP asymmetry of the reference $D^0 \rightarrow K_s \pi^0$ mode.

A_{CP} in $D^0 \rightarrow K^+ K^-$ is measured with 0.11% precision, Therefore, using $D^0 \rightarrow K^+ K^-$ as the control mode reduces the uncertainty due to the control mode in addition to making the analysis simpler. In this work, we report the preliminary measurement of the raw asymmetry of the $D^0 \rightarrow K^+ K^-$ decay using the Belle II Simulation. The final goal of this analysis is to measure the CP asymmetry in $D^0 \rightarrow K_s K_s$, using $D^0 \rightarrow K^+ K^-$ as the reference mode.

Session

Quark and Lepton Flavour Physics

Primary authors: Ms DAS, Sanjeeda Bharati (MNIT Jaipur); Dr LALWANI, Kavita (MNIT Jaipur); Dr CANTO, Angelo Di (BNL, USA)

Presenter: Ms DAS, Sanjeeda Bharati (MNIT Jaipur)

Session Classification: Poster - 1