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Study of Inclusive Decay $\bar{D}^0 \rightarrow K_S X$ in Belle and Belle II Experiments

Study of Inclusive Decay $\bar{D}^0 \rightarrow K_S X$

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We investigate the inclusive decay mode $\bar{D}^0 \rightarrow K_S X$, where X represents any particle that satisfies the decay condition. Within the Belle collaboration, we utilize the $\Upsilon(4S)$ resonance to produce $B^+ B^-$ pairs. Following hadron B -tagging, the B^- is reconstructed using the FEI algorithm, with the B^+ serving as the signal side. On the signal side, we identify the decay $B^+ \rightarrow \bar{D}^0 \pi^+$. Subsequently, the number of K_S mesons in the \bar{D}^0 region is determined using the sPlot technique.

We present preliminary results from a Monte Carlo (MC) study focused on the signal and background of this decay mode, as well as on extracting the branching fraction for $\bar{D}^0 \rightarrow K_S X$.

Keywords: Inclusive decay, FEI algorithm, sPlot, Monte Carlo, branching fraction

Field of contribution

Experiment

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