

Studies of Charm Mixing and CP Violation Using $D^0 \rightarrow K\pi$ Decays

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First evidence for oscillations of neutral D mesons to their antiparticles, and *vice versa*, was presented by the Belle and BaBar experiments in 2007, followed very quickly by the CDF experiment. The LHCb experiment has now studied $D^0 \rightarrow \bar{D}^0$ and $\bar{D}^0 \rightarrow D^0$ oscillations using $\sim 2.3 \times 10^5$ “wrong-sign” (WS) $K\pi$ decays and approximately 230 times more “right sign” (RS) decays. The differences of the D^0 and \bar{D}^0 WS/RS ratios as functions of decay time are sensitive to both direct CP violation and indirect CP violation. This talk will provide a general introduction to the phenomenology of particle-antiparticle mixing and CP violation followed by a discussion of the new LHCb results and bounds on CP violation when they are combined with other measurements.