

Measurement of D^0 - \bar{D}^0 mixing and search for CP violation at Babar

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We present evidence of D^0 - \bar{D}^0 mixing using a time-dependent amplitude analysis of the decay $D^0 \rightarrow K^+ \pi^- \pi^0$ in a data sample of 384 fb^{-1} collected with the *BaBar* detector at the PEP-II e^+e^- collider at SLAC. Assuming CP conservation, we measure the mixing parameters $x'_{K\pi\pi^0} = [2.61^{+0.57}_{-0.68} \text{ (stat.)} \pm 0.39 \text{ (syst.)}] \%$, $y'_{K\pi\pi^0} = [-0.06^{+0.55}_{-0.64} \text{ (stat.)} \pm 0.34 \text{ (syst.)}] \%$. The confidence level for the data to be consistent with the no-mixing hypothesis is 0.1%, including systematic uncertainties. This result is inconsistent with the no-mixing hypothesis with a significance of 3.2 standard deviations. We find no evidence of CP violation in mixing.

Authors: Prof. SOKOLOFF, Michael (University of Cincinnati); LONG, Owen (Babar Collaboration)

Presenter: Prof. SOKOLOFF, Michael (University of Cincinnati)

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