

Measurement of the time-integrated CP asymmetry in $D^0 \rightarrow K_S^0 K_S^0$ decays with LHCb

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CP violation in charm has not yet been observed, although measurements of time-integrated CP asymmetries in $D^0 \rightarrow K^+ K^-$ and $D^0 \rightarrow \pi^+ \pi^-$ decays have reached a remarkable precision, $O(0.1\%)$. The $D^0 \rightarrow K_S^0 K_S^0$ decay is a promising discovery channel for CP violation in charm. A prediction based on Standard Model gives an upper limit for the CP asymmetry of 1.1% (C.L. 95%). Further enhancements could result from contributions from physics beyond the Standard Model. We present a measurement of the time-integrated CP asymmetry in prompt $D^0 \rightarrow K_S^0 K_S^0$ decays, performed using data collected with LHCb experiment in 2015 and 2016 at a 13 TeV pp center-of-mass energy (Run-2). This result improves the sensitivity obtained by LHCb in Run-1.

Teaser (will appear on the printed program)

A new measurement of the CP asymmetry in $D^0 \rightarrow K_S^0 K_S^0$, a promising channel for first detection of CPV in the charm sector, is presented.

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