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The Search for local CP violation in D0 -> pi+pi-pi0 decays with the amplitude analysis

Wednesday 9 April 2025 12:00 (15 minutes)

We present a search for CP violation in the Cabibbo-suppressed $D^0 \to \pi^+\pi^-\pi^0$ mode with more than 1.6M signal candidates, allowing for the most precise amplitude modelling of this decay to date. The measurement uses data sample of pp collisions collected by the LHCb experiment from 2016 to 2018, corresponding to an integrated luminosity of 5.4 fb^{-1}. The D^0 mesons are reconstructed from $D^{*+} \to D^0\pi^+$ decays allowing the flavour at production to be inferred from the charge of the spectator pion. The obtained amplitude model is used to perform the search for CP violation. The CP violating variables can be extracted from the magnitudes and phases of the amplitude model. With respect to the dominant $\rho(770)$ resonances, we reach a statistical sensitivity of 0.1\% for our blinded result.

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