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Charm mixing and CPV using four-body decays at LHCb

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The search for mixing-related CP violation in the charm sector is a topic of significant interest, as this phenomenon is predicted to occur at an extremely suppressed level within the Standard Model. Consequently, any observable signal at the current experimental sensitivity could provide compelling evidence for New Physics. Such measurements can be achieved through phase-space binned analyses using multi-body decays of neutral charm mesons. Preliminary studies of charm-mixing and CPV will be presented using the channels $D \to h^+h^-\pi^+\pi^-$ $(h = K, \pi)$ conducted using data collected by LHCb during Run 2 of the LHC.

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