



Contribution ID: 217

Type: **Talk**

【337】 Search for CP violation in angular distributions of $D^0 \rightarrow 4h$ decays at LHCb

Wednesday 28 August 2019 16:00 (15 minutes)

A great step has been made recently in the field of CP violation in the charm sector, with the first observation of CP asymmetry by the LHCb collaboration (arXiv:1508.03054). A complementary approach to studying decay-rate asymmetries is investigating time-odd triple-product observables, which have the opposite dependence on the strong phase difference and thus complementary sensitivity to CP violation. We present an ongoing study using a novel triple-product asymmetry approach proposed by Durieux and Grossman (PRD92.076013) that uses angular-momentum dependent observables through natural spherical harmonics and angles between daughter particles. The study is performed on decays $D^0 \rightarrow K^+K^-\pi^+\pi^-$ and $D^0 \rightarrow \pi^+\pi^-\pi^+\pi^-$, with data collected by the LHCb experiment in Run2.

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Session Classification: Nuclear, Particle- & Astrophysics

Track Classification: Nuclear, Particle- and Astrophysics (TASK)