



Contribution ID: 86

Type: **Talk**

## Recent measurement of CP violation and mixing with wrong-sign and right-sign $D^0 \rightarrow K\pi$ decays

Monday 26 August 2024 11:20 (20 minutes)

Studying flavor oscillations and CP violation in charm mesons provides a complementary and unique probe of possible interactions beyond the Standard Model with beauty mesons, and allows exploring even higher energy scales. The LHCb experiment collected the largest sample of charm hadrons ever, and in 2019 reported the first observation of CP violation in  $D^0$  decays, marking a milestone in flavour physics. However, the compatibility of this observation with the Standard Model is still debated, and providing complementary experimental results is a crucial step towards clarifying whether we are facing new interactions or an enhancement of non-perturbative QCD effects beyond expectations. In this talk, we present a new measurement of mixing and CP-violating parameters using wrong-sign to right-sign yield ratio for  $D^0 \rightarrow K\pi$  decays, using the data sample collected by the LHCb experiment during LHC Run 2. New analysis methods are used to achieve world-best results, drastically reducing the systematic uncertainties and paving the way for future measurements with larger data samples.

### Internet talk

Maybe

### Is this an abstract from experimental collaboration?

Yes

### Name of experiment and experimental site

LHCb, CERN

### Is the speaker for that presentation defined?

Yes

### Details

The talk will be given by Mateusz Kmiec an LHCb collaboration member on behalf of the collaboration. Mateusz Kmiec is a PhD student at NCBJ (National Centre for Nuclear Research in Poland).

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**Session Classification:** High Energy Particle Physics

**Track Classification:** Main topics: High Energy Particle Physics