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A novel unbinned model-independent method to measure the CKM angle gamma in B+- −> DK+- decays with optimised precision

Tuesday, July 18, 2023 3:40 PM (20 minutes)

We present a novel unbinned method to combine B −> DK and charm threshold data for the amplitude-model unbiased measurement of the CKM angle gamma in cases where the D meson decays to a three-body final state. The new unbinned approach avoids any kind of integration over the D Dalitz plot, to make optimal use the available information. We verify the method with simulated signal data where the D decays to K_S pi+ pi-. Using realistic sample sizes, we find that the new method reaches the statistical precision on gamma of an unbinned model-dependent fit, i.e. as good as possible and better than the widely used model-independent binned approach, without suffering from biases induced by a mis-modeled D decay amplitude. We expect the method to useful also in the study of charm mixing and the development of amplitude models, in particular the study of the phase motion across the Dalitz plot. See arXiv:2305.10787.

Consent

I consent to recording/broadcasting my presentation.

Primary authors: GERSABECK, Evelina (University of Manchester); LANE, Jake (Monash University and University of Manchester); RADEMACKER, Jonas (University of Bristol)

Presenter: RADEMACKER, Jonas (University of Bristol)

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