

SEMINAR TEILCHENPHYSIK

Thema

Model-Independent phase correction in $D \rightarrow K_S \pi^+ \pi^-$ decays for the precise measurement of CKM angle γ in $B^\pm \rightarrow DK^\pm$ transition

Abstract

Precise determination of the Cabibbo-Kobayashi-Maskawa angle γ is a key goal in testing the Standard Model. This talk presents a novel unbinned model-independent method for measuring γ using $B^\pm \rightarrow DK^\pm$ decays, where $D \rightarrow K_S \pi^+ \pi^-$. The method uses the data-driven decay-amplitude phases derived from quantum-correlated charm threshold data from the BESIII experiment. It therefore removes the unavoidable model assumptions of the D decay amplitude, which is an important source of systematic uncertainty and is hard to estimate. This unbinned approach can also make full use of the information in the D decay phase space. Using the simulated data samples of $B^\pm \rightarrow DK^\pm$ decays and quantum-correlated $D \rightarrow K_S \pi^+ \pi^-$ decays, we demonstrate that this method achieves a statistical precision on γ of 4.65 degrees, with a charm-related systematic uncertainty contribution of only 0.3 degrees.

Vortragender

Shenghui Zeng
University of Bristol

Ort

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Zeit

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im Auftrag:

Dr. Maik Becker