

PHYSIKALISCHES KOLLOQUIUM

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FLAVOUR ANOMALIES - A FIRST GLIMPSE TO NEW PARTICLE PHYSICS PHENOMENA?

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Decays of b-hadrons are an excellent place to probe our understanding of particle physics and to search for new so far unobserved physics phenomena. Many of these decays contain quantum loops, which are sensitive to potential contributions from new heavy particles. So-called electroweak penguin decays are one class of these quantum loops. There has been increasing interest in electroweak penguin decays of b-hadrons, due to the emergence of several intriguing tensions between measured observables and theoretical predictions. Of particular interest are measurements of decay rates and angular observables, as well as lepton flavour universality tests, where clean theory predictions are available. The tensions in this area are for individual measurements at the level of 2-3 standard deviations. However a consistent picture seems to emerge which constitutes part of the so-called flavour anomalies.

This talk will give an overview of the recent most relevant analyses of b-hadron decays in this context, with focus on results from the LHCb experiment. Possible theoretical interpretations of the anomalies will also briefly be discussed.