

SEMINAR TEILCHENPHYSIK

Thema

Probing the Standard Model using measurements of semi-leptonic decays at Belle and Belle II

Abstract

The Standard Model of particle physics (SM) has been completed with the observation of the Higgs boson in 2012. However, many questions like the explanation for the large matter-antimatter asymmetry observed in today's universe or the hierarchy problem remain unanswered. The Belle II experiment at the SuperKEKB electron-positron collider at KEK aims at providing new insights into these and other questions by performing indirect searches for physics beyond the SM in the electro-weak sector. The kinematic constraints from the well-defined initial state are especially advantageous in semi-leptonic decays with missing energy.

For some time, a persistent deviation between the standard model expectation and the experimental results is observed for the ratio $R(D^{(*)})$ between the branching fractions $B(B \rightarrow D^{(*)} \tau^+ \nu_\tau)$ and $B(B \rightarrow D^{(*)} l^+ \nu_l)$ ($l = e, \mu$), which hints at a potential violation of lepton flavor universality. One of the leading uncertainties in the measurements is the limited understanding of semi-leptonic decays involving orbitally excited charmed mesons (D^{**}). In my presentation I will show current studies and the latest results by Belle and Belle II on $R(D^{(*)})$ and $B \rightarrow D^{**} l^+ \nu_l$ decays.

Vortragender

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Ort

CP-O3-123

Zeit

Montag, 24.06.2024
15:00 – 16:00 Uhr

im Auftrag:

Dr. Maik Becker