technische universität
dortmund

SEMINAR TEILCHENPHYSIK

Thema

Application of light-cone sum rules (LCSRs) to $D_{(s)} \to P\ell^+\ell^-$ decays

Abstract

$D^+ \to \pi^+\ell^+\ell^-$ decays are of much interest from the point of view of GIM cancellation and potential new sources of the FCNC $c \to u$ transitions. The hadronic amplitude of this decay is dominated by the combination of weak annihilation with the emission of a virtual photon which are purely long-distance effects.

In this talk, I will discuss a new method to analyse these decays, combining QCD light-cone sum rules (LCSRs) with hadronic dispersion relations. This method allows us to determine relative strong phases of the ρ-, ω- and ϕ-meson resonances and to estimate of the contributions of heavier hadronic states. The final results for $D^+ \to \pi^+\ell^+\ell^-$ width are obtained to be not much smaller than the current upper bound measured by LHCb collaboration. In the later part of my talk, I will discuss the relations of these decays to other Cabibbo favoured and Cabibbo suppressed modes using U-spin symmetry. Finally, I present results for Cabibbo-favoured modes, $D_s^+ \to \pi^+\ell^+\ell^-$ and $D^0 \to \overline{K}^0\ell^+\ell^-$, which proceed via the same weak annihilation mechanism as a byproduct of our analysis.

Vortragender

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Ort

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Zeit

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10:00 – 11:00 Uhr

im Auftrag:

Dr. Maik Becker