Contribution ID: **14**   Type: **not specified**

Subleading Corrections to the Inclusive Semi-leptonic Penguin Decays

Monday 2 July 2018 11:30 (30 minutes)

We analyze the factorization to subleading power in the flavor changing neutral current processes $\bar{B} \to X_s \ell^+ \ell^-$ and $\bar{B} \to X_d \ell^+ \ell^-$. In particular, we compute the so-called resolved contributions and explore the numerical impact on observables. In these contributions the virtual photon couples to light partons instead of connecting directly to the effective weak-interaction vertex.

As distinctive feature, the resolved contributions remain nonlocal when the hadronic mass cut is released. Therefore, they reflect an irreducible uncertainty not dependent on the hadronic mass cut. They factorize in hard functions describing physics at the high scale m_b, in so-called jet functions characterizing the physics at the hadronic final state X_s which corresponds to an invariant mass of order $\sqrt{m_b \Lambda_{\mathrm{QCD}}}$, and in soft functions, so-called shape functions, parametrizing the hadronic physics at the scale Λ_{QCD}. Knowing the explicit form of the latter, one can derive general properties of such shape functions which allow for precise estimates of the corresponding uncertainties.

Authors: Prof. HURTH, Tobias (Johannes Gutenberg University Mainz); Dr BENZKE , Michael (University of Hamburg); Dr TURCZYK, Sascha (Johannes Gutenberg UNiversity Mainz)

Presenter: Prof. HURTH, Tobias (Johannes Gutenberg University Mainz)

Session Classification: Morning Session II