



Contribution ID: 420

Type: **not specified**

Is the Charm Heavy?

Thursday 16 May 2024 16:30 (15 minutes)

It is standard to treat the up, down, and strange quarks as “light” (non-perturbative), while the charm, bottom, and top quarks are considered “heavy” (perturbative). However, this is a somewhat simplistic picture. As I will argue in my talk, charm exhibits hints of significant rescattering effects, which is a sign of the importance of non-perturbative QCD. To make my point, I propose a parameter, a combination of hadronic matrix elements, that serves as a clean probe of rescattering effects in charm through $D \rightarrow \pi\pi$ decays. Currently, this parameter cannot be calculated from first principles. In the isospin limit, however, it can be extracted from existing experimental data. I will argue that the current data suggests the presence of significant rescattering effects in charm. A dedicated analysis with current and future data will enable us to significantly reduce the uncertainty of the determination of this parameter and allow us to verify whether there is indeed substantial rescattering in $D \rightarrow \pi\pi$ decays.

Mini Symposia (Invited Talks Only)

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