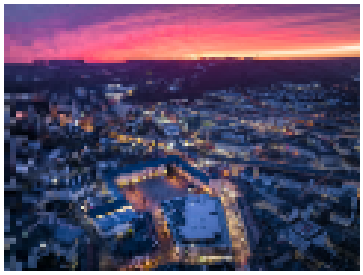

Contribution ID: **6** Type: **not specified**

Sum Rules for Lifetimes

Monday 30 September 2024 15:30 (20 minutes)

Precise determination of hadronic matrix elements plays a crucial role for interpreting potential deviations from the Standard Model observed in experiments testing flavor physics. While lattice QCD provides first principles calculations, current results are still limited to a subset of the operators that may appear in theories of new physics. The sum rule approach allows for a complementary determination of matrix elements directly from QCD, with theoretical uncertainties that can be systematically improved. Previous research successfully ascertained Standard Model hadronic matrix elements for dimension-six F=0,2 operators, demonstrating competitiveness with lattice findings. Our aim is to expand upon these findings by including the entire set of four-quark QCD operators for lifetimes, crucial in scenarios Beyond the Standard Model, where lattice results are currently absent. This extension includes operators with Dirac structures not previously examined in sum rules analyses documented in existing literature. This will provide for the first time bag parameter results which can increase the precision of a wide variety of new physics theories. The bag parameter results will be determined using HQET sum rules for three-point correlators, which requires a three-loop computation. In addition there is a one-loop computation of the QCD-HQET matching required.

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