Contribution ID: **26** Type: **not specified**

Lovro Dulibic: Nonperturbative contributions of QCD condensates to DDbar mixing

Thursday 30 October 2025 11:30 (25 minutes)

A naive leading-order perturbative calculation of the charm meson mixing parameters falls short of the experimental values by several orders of magnitude. This discrepancy arises from the Glashow-Iliopoulos-Maiani (GIM) mechanism, which strongly suppresses the leading contributions. Higher-order corrections, nonperturbative effects, and possible BSM effects can lift this suppression through flavour SU(3) breaking. In this work, we investigate the nonperturbative long-distance contributions arising from QCD condensates, incorporating for the first time the effects of mixed and four-quark condensates. Our results show an improvement in the predicted mixing parameters by up to two orders of magnitude compared with the perturbative NLO result, providing valuable insights into nonperturbative QCD dynamics. Although our estimates remain below experimental measurements, this study represents an important step toward narrowing the gap between theory and observation - an essential step in assessing potential contributions from BSM physics.