Hadronic Contributions to New Physics Searches



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Kaon Flavour Physics Strikes Back

Wednesday 28 September 2016 09:00 (35 minutes)

Summary

After years of silence we should witness in the rest of this decade and in the next decade the revival of kaon flavour physics. This is not only

because of the crucial measurements of the branching ratios for the rare $K \rightarrow \pi \nu \bar{\nu}$ decays by NA62 and KOTO that being theoretically clean and very sensitive to new physics (NP) could hint for new phenomena even beyond the reach of the LHC without any significant theoretical uncertainties. Indeed

simultaneously the advances in the calculations of perturbative and in particular non-perturbative QCD effects in ε'/ε , ε_K , ΔM_K , $K_L \to \mu^+\mu^-$ and $K_L \to \pi^0\ell^+\ell^-$ will increase the role of these observables in searching for NP.

In fact the hints for NP contributing to ε'/ε

have been already signalled last year through improved estimates of hadronic matrix elements of QCD and electroweak penguin operators Q_6 and Q_8 by lattice QCD and large N dual QCD approach. This talk summarizes in addition to this new flavour anomaly the present highlights of this field including some results from concrete NP scenarios.

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Session Classification: Flavor