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Lattice QCD inputs to test the Standard Model in the flavour sector

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Physics beyond the Standard Model can be tracked from direct measurements at the electroweak scale, for instance by searching new particles (Kaluza-Klein modes, supersymmetric particles, ...). Low energy processes and rare events can also be highly sensitive probes of New Physics: they are either mediated by virtual loops in which exotic particles can circulate or they occur at tree level where new couplings can be involved. In other words, flavour physics is very helpful to put stringent constraints on New Physics scenarios. However any fruitful analysis of experimental data in the quark sector needs the knowledge of theoretical inputs (hadronic form factors, decay constants) that encode the long-dynamics of QCD, in particular the confinement of quarks and gluons in hadrons. A perturbative approach to estimate them is not satisfying at the present experimental level of precision; the best method is lattice QCD. In this talk we will discuss recent works performed by the lattice community that are particularly relevant in flavour physics and tests of physics beyond the Standard Model: unitarity of the CKM matrix, Delta F=2 oscillations, b –> s transition, anomalous magnetic moment of the muon.

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