

Impact of High Scale New Physics on CP Violating and Flavor Changing Quark Dipole Transitions

Thursday, February 16, 2023 7:00 PM (1h 30m)

We explore the CP-violating (CPV) effects of heavy New Physics in the flavour-changing quark dipole transitions, within the framework of Standard Model Effective Field Theory (SMEFT). We connect the operators defined at the heavy scale Λ with the low energy observable via the Renormalisation Group (RG) evolution of the appropriate Wilson coefficients. We investigate RG-induced correlations between different flavour-violating processes and electric dipole moments (EDMs) within the Minimal Flavour Violating and $U(2)^3$ quark flavour models. We present bounds on the Wilson coefficients of the dipole operators at the high scale $\Lambda = 5 \text{ TeV}$ from CPV induced contributions to observables in non-leptonic and radiative B , D and K decays as well as the neutron and electron EDMs. This can guide experimental searches to focus on more sensitive observables.

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