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Charm Physics: Theory status and window to New Physics

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Motivated by the possible signals of lepton number violation in B physics, known as $RD^{(*)}$ and RK , RK^* puzzles, we investigate whether

charm physics might offer a window to New Physics, too.

Relying on the existing lattice QCD and experimental results on charm leptonic and semileptonic weak decays, one can question presence of NP in the charge current transitions.

One can constrain the NP effects in differential decay width distributions, forward-backward asymmetry in $D \rightarrow Kl\nu$.

The NP might affect flavour changing neutral current transitions as charm meson oscillations and rare charm decays.

We present constraints on NP parameters for a few representative models of NP, as new vector gauge bosons, leptoquarks and THDM.

Possible tests of lepton flavour universalities are discussed.

The effects of Dark Matter particles in charm mesons are investigated too.

Experimental Collaboration

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