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Lepton flavour universality tests at LHCb

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In the Standard Model the three charged leptons are identical copies of each other, apart from mass differences, and the electroweak coupling of the gauge bosons to leptons is independent of the lepton flavour. This prediction is called lepton flavour universality (LFU) and is well tested in tree level decays; any violation of LFU would be a clear sign of physics beyond the Standard Model. Experimental tests of LFU in semileptonic decays of b hadrons and in rare b decays are highly sensitive to models of New Physics in which new, heavy particles couple preferentially to the 2nd and 3rd generations of leptons. Such models often also predict charged lepton flavour violation (CLFV). Recent results from LHCb on LFU in semileptonic b → clν transitions and rare b->sll decays are discussed, along with searches for CLFV.

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