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b -> c tau nu bar_tau semileptonic decays: visible distributions and tests of lepton flavour universality

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One of the features of the SM is Lepton Flavour Universality. This property gives rise to a lepton flavour symmetry in the SM that is only broken by the differences in the charged lepton masses. There is experimental evidence in B-meson semileptonic decays that points to the possibility of LFUV affecting the $b \rightarrow c\tau \bar{\nu}_{\tau}$ transition. To explain present data one can adopt a phenomenological strategy and take an effective Hamiltonian that includes the full set of dimension-6 semileptonic $b \rightarrow c$ operators. The NP effects are encoded in a set of Wilson coefficients fitted to data. In this talk, we will propose and discuss some observables for discriminating between different NP models, which otherwise would give the same results for observables as R(D) and $R(D^*)$. We will focus on the observables that can be extracted from the kinematics of the charged particle that originates in the subsequent tau decay since the final tau momentum is difficult to reconstruct.

Primary author: PENALVA MARTÍNEZ, Neus (ICC-UB)

Presenter: PENALVA MARTÍNEZ, Neus (ICC-UB)