

Mini-workshop on $D^{(*)}$ tau nu and related topics

Contribution ID : 13

Semileptonic $B(s)$ decays to excited charmed mesons with e, μ, τ and searching for new physics with $R(D^{**})$

Tuesday 28 Mar 2017 at 09:20 (00h35')

Content :

Semileptonic B meson decays into the four lightest excited charmed meson states (D^{*0} , D^{*1} , $D1$, and D^{*2}) and their counterparts with s quarks are investigated, including the full lepton mass dependence. We derive the standard model predictions for the differential branching fractions, as well as predictions for the ratios of the semi-tauonic and light lepton semileptonic branching fractions. These can be systematically improved using future measurements of the total or differential semileptonic rates to e and μ , as well as the two-body hadronic branching fractions with a pion, related by factorization to the semileptonic rate at maximal recoil. To illustrate the different sensitivities to new physics, we explore the dependence of the ratio of semi-tauonic and light-lepton branching fractions on the type-II and type-III two-Higgs-doublet model parameters, $\tan\beta$ and $m_{\pm H}$, for all four states.

<https://arxiv.org/abs/1606.09300>

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