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Foot Prints of New Physics in b->cτν Transitions

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In this work, we perform a combined analysis of the R(D), R(D*) and R(J/psi) anomalies in a model-independent manner based on the general framework of the four-fermion effective field theory, with paying special attention to the employ of the hadronic form factors. For the B->D(*) transition form factors, we use the HQET parametrization that include the higher order corrections of O(lambda_QCD/m,alpha_s) and determined
recently from a fit to lattice QCD and light-cone sum rule results in complementary kinematical regions of the momentum transfer. For the Bc->J/psi(eta_c) transitions, we use the form factors calculated in the covariant light-front quark model, which are found to be well consistent with the preliminary lattice results. From our analysis,
the two classes of vector operators are shown to be the most favored single new physics (NP) operators by the
current experimental constraints within 2sigma and the LEP1 data on Br(Bc->τν) as well as the minimum chiˆ2 fit,
while the tensor operator is also allowed but severely constrained, and the scalar ones are excluded. Using the
favored ranges and fitted values of the Wilson coefficients of the single NP operators, we also give prognosis for
the physical observables such as the ratios of decay rates R(D(D*), R(J/psi(eta_c)) and other polarized observables as well as the q2 distributions.

Type

Parallel talk

Sessions (parallel only)

Heavy Flavor

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