



Contribution ID: 476

Type: Parallel talk

## Global fit to $b \rightarrow c\tau\nu$ transitions

Friday, July 12, 2019 12:40 PM (20 minutes)

We perform a general model-independent analysis of  $b \rightarrow c\tau\bar{\nu}_\tau$  transitions, including measurements of  $\mathcal{R}_D$ ,  $\mathcal{R}_{D^*}$ , their  $q^2$  differential distributions, the recently measured longitudinal  $D^*$  polarization  $F_L^{D^*}$ , and constraints on the  $B_c \rightarrow \tau\bar{\nu}_\tau$  lifetime. A global fit to a general set of Wilson coefficients of an effective low-energy Hamiltonian is presented, assuming CP-invariance and linear electroweak symmetry breaking. The fitted solutions are interpreted in terms of hypothetical new-physics mediators. From the results obtained, we analyze the predictions for additional  $b \rightarrow c$  observables such as the baryonic transition  $\Lambda_b \rightarrow \Lambda_c\tau\bar{\nu}_\tau$ , the ratio  $\mathcal{R}_{J/\psi}$ , the forward-backward asymmetry  $calA_{FB}^{D^{(*)}}$ , the  $\tau$  polarization  $\mathcal{P}_\tau^{D^{(*)}}$ , and the longitudinal  $D^*$  polarization  $F_L^{D^*}$ . At the  $1\sigma$  level, one observes clear tensions among the current experimental inputs, independently of any new-physics hypothesis, which suggests that the reported anomalies could be partly driven by underestimated systematic uncertainties.

**Primary authors:** PEÑUELAS, Ana (IFIC); MURGUI GALVEZ, Clara

**Co-authors:** PICH, Antonio (IFIC, U. Valencia -); JUNG, Martin (TUM IAS / Excellence Cluster Universe)

**Presenter:** PEÑUELAS, Ana (IFIC)

**Session Classification:** Flavour Physics and CP Violation

**Track Classification:** Flavour Physics and CP Violation