## Portoroz 2015: Particle Phenomenology From the Early Universe to High Energy Colliders



Contribution ID: 36

Type: Planary Talk

## Discerning new physics in charm meson leptonic and semileptonic decays

Friday 10 April 2015 09:23 (23 minutes)

Current experimental information on the charm meson decay observables in which the  $c \to s\ell\nu_{\ell}$  transitions occur is well compatible with the Standard Model (SM) predictions. Recent precise lattice calculations of the  $D_s$  meson decay constant and form factors in  $D \to K\ell\nu$  decays offer a possibility to search for the small deviations from the SM predictions in the next generation of the high intensity flavour experiments. We revisit the constraints from these processes on the new physics (NP) contributions in the effective theory approach. In the case of  $D \to K\ell\nu$  we identify observables sensitive on NP contribution coming from the scalar Wilson coefficient, namely the forward-backward and the transversal muon polarization asymmetries. We also identify the allowed deviations from the lepton flavour universality using the ratio of the branching fractions involving muons and electrons in the final state.

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Session Classification: Flavour