

## **Wave-function and CKM renormalization: the case for new physics**

We re-examine the issue of wave function renormalisation for unstable particles in the presence of electroweak interactions and its relation with the renormalisation of the CKM mixing matrix elements. We show that a proper LSZ-compliant prescription leads to gauge independent amplitudes. The resulting wave function renormalisation constants necessarily possess absorptive parts, but they comply with the expected requirements concerning CP and CPT. The results obtained using this prescription are different (even at the level of the modulus squared of the amplitude) from the ones neglecting the absorptive parts e.g. in the case of top decay. The difference might be numerically relevant for present determinations of the CKM elements.

Then we proceed to consider possible contributions from new physics, parametrized by an effective lagrangian with some low-energy constants. We assume that such contributions (possibly from the integration of heavy states) should be comparable con radiative corrections in the SM and try to extract possible consequences.

### **I intend to submit my contribution for the proceedings**

Yes

**Primary author:** Prof. ESPRIU, Domenec (University of Barcelona)

**Presenter:** Prof. ESPRIU, Domenec (University of Barcelona)