Contribution ID: **13** Type: **not specified**

Opportunistic CP violation

Tuesday 20 June 2023 15:10 (25 minutes)

In the electroweak sector of the Standard Model, CP violation arises through a very particular interplay between the three quark generations, as described by the CKM mechanism and the single Jarlskog invariant J_4. Once generalized to the Standard Model Effective Field Theory (SMEFT), this peculiar pattern gets modified by higher-dimensional operators, whose associated Wilson coefficients are usually split into CP-even and odd parts. However, CP violation at dimension four, i.e., at the lowest order in the EFT expansion, blurs this distinction: any Wilson coefficient can interfere with J_4 and mediate CP violation. In this talk, I will characterize such interferences at first order in the SMEFT expansion, and explain how to capture the associated parameter space via a set of 1551 linear CP-odd flavor invariants. This construction describes both new, genuinely CP-violating quantities as well as the interference between J_4 and CP-conserving ones, a behaviour we dubbed opportunistic CP violation.

PhD Student

Authors: GROJEAN, Christophe (DESY (Hamburg) and Humboldt University (Berlin)); GENDY ABD EL SAYED, Emanuele; RUDERMAN, Joshua (Princeton University); BONNEFOY, Quentin (DESY)

Presenter: GENDY ABD EL SAYED, Emanuele

Session Classification: Tuesday PM1