Contribution ID: **17** Type: **not specified**

Effects of squared four-fermion operators of the Standard Model Effective Field Theory on meson mixing

Tuesday 28 June 2022 17:15 (15 minutes)

The Standard Model Effective Field Theory (SMEFT) is a universal way of parametrizing New Physics (NP) manifesting as new, heavy particle interactions with the Standard Model (SM) degrees of freedom, that respect the SM gauged symmetries. Higher order terms in the NP interactions possibly lead to sizable effects, mandatory for meaningful phenomenological studies, such as contributions to neutral meson mixing, which typically pushes the scale of NP to energy scales much beyond the reach of direct searches in colliders. I discuss the leading-order renormalization of double-insertions of dimension-6 four-fermion operators that change quark flavor by one unit (i.e., $|\Delta F| = 1$, $F =$ strange-, charm-, or bottom-flavor) by dimension-8 operators relevant to meson mixing (i.e., $|\Delta F| = 2$) in SMEFT, and consider the phenomenological implications of contributions proportional to large Yukawas, setting then bounds on the Wilson coefficients of operators of dimension-6. Given the underlying interest of SMEFT to encode full-fledged models at low energies, this work stresses the need to consider dimension-8 operators in phenomenological applications of dimension-6 operators of SMEFT.

Author: VALE SILVA, Luiz

Presenter: VALE SILVA, Luiz

Session Classification: Parallel Session III.1