Contribution ID: **40** Type: **not specified**

Quantum SMEFT tomography: top quark pair production at the LHC

Friday 17 June 2022 09:30 (30 minutes)

Quantum information observables, such as entanglement measures, provide a powerful way to characterize the properties of quantum states. We propose to use them to probe the structure of fundamental interactions and to search for new physics at high energy. Inspired by recent proposals to measure entanglement of top quark pairs produced at the LHC, we examine how higher-dimensional operators in the framework of the SMEFT modify the Standard Model expectations. We explore two regions of interest in the phase space where the Standard Model produces maximally entangled states: at threshold and in the high-energy limit. We unveil a non-trivial pattern of effects, which depend on the initial state partons, qq or gg, on whether only linear or up to quadratic SMEFT contributions are included, and on the phase space region. In general, we find that higher-dimensional effects lower the entanglement predicted in the Standard Model.

Presenter: AOUDE, Rafael