Contribution ID: **7** Type: **not specified**

SMEFiT: a flexible toolbox for global interpretations of particle physics data with effective field theories

Tuesday 20 June 2023 10:10 (20 minutes)

The Standard Model Effective Field Theory (SMEFT) provides a robust framework to interpret experimental measurements in the context of new physics scenarios while minimising assumptions on the nature of the underlying UV-complete theory. We present the Python open source SMEFiT framework, designed to carry out parameter inference in the SMEFT within a global analysis of particle physics data. SMEFiT is suitable for inference problems involving a large number of EFT degrees of freedom, without restrictions on their functional dependence in the fitted observables, can include UV-inspired restrictions in the parameter space, and implements arbitrary rotations between operator bases. Posterior distributions are determined from two complementary approaches, Nested Sampling and Monte Carlo optimisation. SMEFiT is released together with documentation, tutorials, and post-analysis reporting tools, and can be used to carry out state-of-the-art EFT fits of Higgs, top quark, and electroweak production data. To illustrate its functionalities, we reproduce the results of the recent ATLAS EFT interpretation of Higgs and electroweak data from Run II and demonstrate how equivalent results are obtained in two different operator bases.

PhD Student

yes

Primary authors: MAGNI, Giacomo (Nikhef, VU Amsterdam); Dr ROJO, Juan (VU Amsterdam and Nikhef); GIANI, Tommaso

Presenter: GIANI, Tommaso

Session Classification: Tuesday AM1