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An Effective (Field Theory) Pathway to the New Standard Model

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The ultimate goal of particle physics is uncovering a fundamental theory which allows the coherent interpretation of phenomena taking place at all energy and distance scales. The Effective Field Theory framework is particularly powerful in this respect, in that it makes possible a model-independent, theoretically consistent interpretation of particle physics data measured by a range of different experiments. In talk I present recent progress in global analyses of LHC data in terms of the Standard Model Effective Field Theory, in particular focusing on the combination of Higgs, electroweak, and top quark production measurements. I will also discuss how to construct optimally-sensitive observables for EFT fits with machine learning and the interplay between EFT effects and proton structure when interpreting high-pT LHC measurements.

Presenter: ROJO, Juan