Contribution ID: **25** Type: **not specified**

Is SMEFT Enough?

Wednesday 19 May 2021 16:00 (1 hour)

There are two canonical approaches to treating the Standard Model as an effective field theory: the Standard Model EFT (SMEFT), respecting the full electroweak gauge symmetry, and the Higgs EFT (HEFT), respecting only electromagnetism. Of these, SMEFT has become the predominant approach, both as a framework for the interpretation of LHC Higgs data and as a laboratory for exploring the properties of effective field theory. This raises a number of questions: Is HEFT relevant in light of current data? What types of UV physics (if any) require HEFT, rather than SMEFT? Is SMEFT enough?
In this talk, I'll develop a geometric picture of SMEFT and HEFT that provides sharp criteria for determining the appropriate EFT for the Higgs sector, illuminating the physical scenarios that require HEFT and arguing that SMEFT is not enough. I'll draw further connections between this geometric picture, scattering amplitudes, and the scale of unitarity violation in the two EFTs, ultimately framing an interesting question for the LHC and future colliders: is electroweak symmetry linearly realized by the known particles?

Zoom link:
https://weizmann.zoom.us/j/97087622747?pwd=YUIySnVRNFEveXQyZzdEeWM4MU8vQT09

Presenter: CRAIG, Nathaniel (UC Santa Barbara)