

## Cosmological history of the HEFT

*Friday 2 June 2023 12:20 (5 minutes)*

Effective Field Theories (EFTs) are crucial for new physics searches in the electroweak sector. They are a model-independent framework which can be used to classify the low-energy effects of heavy, new physics on experimental results which deviate from the standard model prediction. For this reason, the Standard Model Effective Field Theory (SMEFT), where the Higgs doublet transforms linearly under electroweak symmetry, has gained recent popularity. However, the SMEFT is not as general an EFT as the Higgs EFT (HEFT), where the Higgs doublet transforms non-linearly. The universe, as always, is reluctant to reveal its secrets: is it SMEFT or HEFT/SMEFT? Particle colliders will certainly shed some light on this dichotomy, yet they can only probe near the vacuum. We turn instead to cosmology, specifically the gravitational waves that may have been produced in an early universe phase transition, and could provide us with a lens with which to resolve the SMEFT or HEFT/SMEFT dichotomy, and the nature of electroweak symmetry breaking.

**Would you be interested in presenting a poster? (this will not impact the decision on your talk)**

**Primary author:** WEST, MIA, ROBIN, BYRON

**Co-authors:** CRIADO ÁLAMO, Juan Carlos (University of Granada); HOUTZ, RACHEL (IPPP Durham); ALONSO DE PABLO, Rodrigo (University of Durham (GB))

**Presenter:** WEST, MIA, ROBIN, BYRON

**Session Classification:** Gravitational Waves