

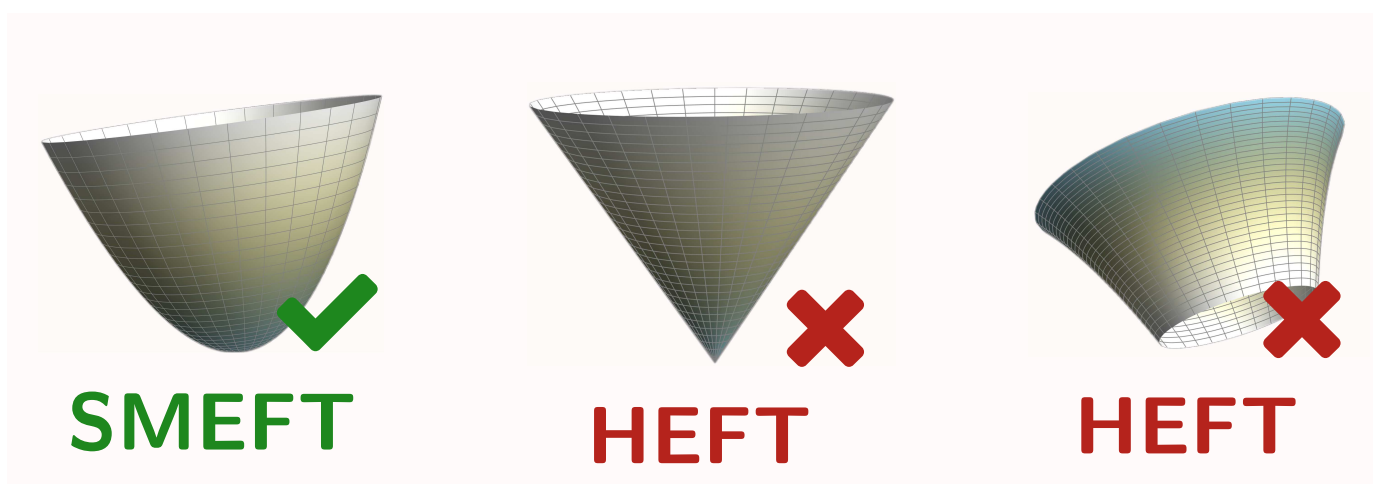


Charting the Higgs sector: SMEFT, HEFT and the geometry of scalar theories.

Tuesday, 02 December, 2025
Auditorium & Webcast 16:00 h

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With no clear signs of new resonances at the LHC, searches for physics beyond the Standard Model are increasingly targeting small indirect effects potentially induced by heavy physics beyond the collider's reach, which are captured by Effective Field Theories (EFTs). While the Standard Model EFT (SMEFT) is the established framework for this purpose, there is growing interest in scenarios that lie outside its underlying assumptions. An interesting way to explore them is by adopting the Higgs EFT (HEFT)—also known as electroweak chiral Lagrangian—which provides a more general EFT extension of the SM.

The first part of the talk will introduce HEFT and outline its key physics features. In particular, I will discuss some relevant aspects of the organization of the HEFT expansion, highlighting how they lead to phenomenological differences compared to the SMEFT. The second part of the talk will turn to a more formal perspective: understanding the interplay of SMEFT and HEFT at a fundamental level motivates the development of QFT formulations that are manifestly invariant under field redefinitions. This is typically achieved through differential-geometric methods which, however, face limitations when faced with higher-dimensional interactions. I will give an introductory overview of this developing program, and present some recent progress in the geometric interpretation of scalar EFTs.



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