ID de Contribution: **12** Type: **Non spécifié**

Solving the Goldstone boson catastrophe in generic theories and two-loop Higgs masses in non-supersymmetric models

mercredi 26 avril 2017 12:00 (20 minutes)

After the Higgs discovery, calculating its properties with high precision has become of great importance in the study of extensions of the Standard Model. The state-of-the-art calculation of Higgs masses is now at two-loop order for generic theories, performed in the Landau gauge. However, these calculations are plagued by infrared divergences due to tachyonic running Goldstone masses – the so-called Goldstone boson catastrophe (GBC). I will present the recent solution to this problem for general renormalisable field theories [1609.06977] and the study of two-loop corrections to Higgs masses in non-supersymmetric models, made possible by the implementation of the solution to the GBC in SARAH.

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Classification de Session: Higgs and BSM

Classification de thématique: Higgs and BSM physics