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One-loop computations from the Electroweak Chiral Lagrangian with a light Higgs

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Recently, a new boson has been discovered at LHC which, so far, fits the properties of the SM Higgs boson. This would make the SM unitary. However, the SM is not the more general low-energy dynamics for the minimal electroweak symmetry breaking sector (EWSBS) with three Goldstone bosons and one light scalar.

By using a more general low energy effective Lagrangian for these four particles and their scattering amplitudes, we study different processes at one-loop precision, and identify the counterterms needed to cancel the divergences.

Our aim is using unitarization methods over a partial wave decomposition of these amplitudes, in order to make phenomenological prediction which can be tested at LHC run II and to discuss the limitations of our computations. We specially look for sets of parameters which lead to a strongly interacting regime for the EWSBS.

The studied processes are the elastic scattering amplitude for both the longitudinal components of the gauge bosons $V = W, Z$ and the light scalar φ , as well as the inelastic channels $VV \rightarrow \varphi\varphi$.

Summary

Based on:

<http://link.springer.com/article/10.1007%2FJHEP02%282014%29121>

<http://iopscience.iop.org/0954-3899/41/2/025002/>

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