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On the renormalization of the electroweak chiral Lagrangian

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We deal here with the off-shell renormalization of the chiral effective Lagrangian for physics beyond the Standard Model, based on a non-linear realization of the $SU(2)_L \times U(1)_Y$ gauge symmetry breaking in the presence of a light Higgs particle, up to four derivatives. We consider the full would-be Goldstone bosons and Higgs sector of the Lagrangian. All one loop amplitudes are computed using dimensional regularization. Apparent chiral noninvariant divergences are encountered in the process. Nevertheless, they are non-physical. We provide a method for the renormalization of these amplitudes off- shell, which involves a redefinition of the would-be Goldstone boson fields that includes space-time derivatives and the Higgs field.

Based on work done with Belen Gavela, Kirill Kanshin, Pedro Machado, Sara Saa, Stefano Rigolin

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