Contribution ID : **54** Type : **Oral presentation**

EW Chiral Lagrangian with a Light Higgs and the gamma gamma–> WL+ WL– and gamma gamma–>ZL ZL scattering at One Loop

Saturday, 5 July 2014 10:00 (15)

In this work we study the $\gamma\gamma \to W_L^+ W_L^-$ and $\gamma\gamma \to Z_L Z_L$ scattering processes within the effective chiral Lagrangian approach, including a light Higgs-like scalar as a dynamical field together with the would-be-Goldstone bosons $w^{\pm}$ and z associated to the electroweak symmetry breaking. This approach is inspired by the possibility that the Higgs-like boson be a composite particle behaving as another Goldstone boson, and assumes the existence of a mass gap between m_h, m_W, m_Z and the potential new emergent resonances, setting an intermediate energy region (above $m_{h,W,Z}$ and below the resonance masses) where the use of these effective chiral Lagrangians are the most appropriate tools to compute the relevant observables. We analyse in detail the proper chiral counting rules for the present case of photon-photon scattering and provide the one-loop $\gamma\gamma \to W_L^+ W_L^-$ and $\gamma\gamma \to Z_L Z_L$
scattering amplitudes within this Effective Chiral Lagrangian approach, including a discussion on the involved renormalization procedure. We also propose here a joint analysis of our results for the two-photon scattering amplitudes together with other photonic processes and electroweak precision observables for a future comparison with data. This could help to disentangle the nature of the light Higgs-like particle.

Summary

Primary author(s) : Prof. DOBADO, Antonio (Departamento de Física Teórica. Universidad Complutense); Dr. SANZ-CILLERO, Juan Jose (Universidad Autonoma de Madrid - IFT); HERRERO, Maria Jose (UAM-IFT); Mr. DELGADO LÓPEZ, Rafael (Dep. Física Teórica I, Universidad Complutense de Madrid (UCM))

Presenter(s) : Dr. SANZ-CILLERO, Juan Jose (Universidad Autonoma de Madrid - IFT)

Session Classification : BEH Physics

Track Classification : Brout-Englert-Higgs physics