Contribution ID: **3**   Type: **Regular Talk (15'+5')**

Effective potential and dynamical symmetry breaking up to five loops in a massless abelian Higgs model

Friday 3 December 2021 10:45 (20 minutes)

we investigate the consequences of the Renormalization Group Equation (RGE) in the determination of the effective potential and the study of Dynamical Symmetry Breaking (DSB) in a massless Abelian Higgs (AH) model with N-component complex scalar field in (3+1) dimensional spacetime. The classical Lagrangian presents scale invariance, which is broken by radiative corrections to the effective potential. We studied the behavior of effective potential and observed that the configuration of the minimum of potential, where is possible to study the DSB in the leading logs aproximation. This approach was reached by the use of RGE with the help of renormalization group functions, $\widetilde{\beta}$ and $\widetilde{\gamma}$, calculated up to four loops in the MS scheme. Using these renormalization group functions, we find the version of these in the CW scheme, β and γ, using the requirement of multi-scales. So, we apply them together with the RGE for computing the effective potential up to five loops and with this, we studied the DSB in or model where we have found for $N \geq 104$ that the gauge dependence of ξ is approximately removed.

Authors: Dr GÓMEZ QUINTO, Andres (Universidad del Atlantico); Dr VEGA MONROY, Ricardo (Universidad del Atlantico); Dr FERRARI, Alysson (Universidade Federal do ABC); Dr LEHUM, André (Universidade Federal do Pará,)

Presenter: Dr GÓMEZ QUINTO, Andres (Universidad del Atlantico)

Session Classification: Theory - Phenomenology

Track Classification: Theory - Phenomenology