

# Custodial Naturalness in the Electroweak Hierarchy

## Content

This mechanism aims to provide a solution to the hierarchy problem. To this end, it is based on a model with classical conformal invariance and a global custodial  $SO(6)$  symmetry imposed at high energies. Quantum corrections break the conformal symmetry through the Coleman–Weinberg mechanism, dynamically generating a new scale and inducing vacuum expectation values for the scalar fields. The spontaneous breaking of the custodial symmetry gives rise to the Higgs boson as a pseudo-Nambu–Goldstone boson (pNGB), thereby protecting its mass from large radiative corrections. Interactions that explicitly break the custodial symmetry generate only small contributions to the Higgs mass, naturally leading to a hierarchy between the electroweak scale  $v_H$  and the new dynamical scale  $v_\Phi$ , without requiring severe fine-tuning.

## Summary

**Primary author(s)** : Dr. ESPINOZA-HERNANDEZ, Maria Catalina (Instituto de Fisica, UNAM.); Mr. JIMENEZ ROMAN, Juan (Instituto de Física, UNAM)

**Presenter(s)** : Mr. JIMENEZ ROMAN, Juan (Instituto de Física, UNAM)