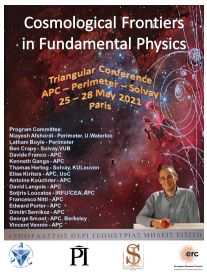

ID de Contribution: **22** Type: **Non spécifié**

Conformal symmetry: towards the link between the Fermi and the Planck scales

vendredi 28 mai 2021 17:30 (40 minutes)

If the mass of the Higgs boson is put to zero, the classical Lagrangian of the Standard Model (SM) becomes conformally invariant (CI). Taking into account quantum non-perturbative QCD effects leads to electroweak symmetry breaking with the scale ~100 MeV which is three orders of magnitude less than it is observed experimentally. Depending on the mass of the top quark, the radiative corrections may lead to another minimum of the effective potential for the Higgs field with vev ⊠ MP, where MP is the Planck mass, at least 16 orders of magnitude more than it is observed. We explore yet another source of CI breaking associated with gravity. We suggest a non-perturbative mechanism that can reproduce the observed hierarchy between the Fermi and the Planck scales. The crucial role in this effect is played by a nonminimal coupling of the Higgs field to the Ricci scalar and the Palatini formulation of gravity.

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Classification de Session: Second Session, Friday