

The XXIX International Conference on Supersymmetry and Unification of Fundamental Interactions (SUSY 2022)



Contribution ID: 123

Type: **not specified**

Sky Meets Laboratory via RGE: Light Higgs Inflation, Axion and Gravitational Waves

Friday 1 July 2022 18:20 (20 minutes)

We investigate in a conformally extended B–L scenario radiative plateau Higgs inflation while dynamically generating the Electroweak and Seesaw scale. The inflationary flat potential is a result of cancellations of quantum corrections between the gauge and Yukawa couplings. We show the theoretically consistent parameter space regions in LHC searches for this particle as well as in CMB.

In the second part of the talk, as a solution to the SM hierarchy problem, we will discuss model-building with classical scale invariance in 4-dimensional QFT satisfying Total Asymptotic Freedom (TAF): the theory holds up to infinite energy, where all coupling constants flow to zero and is devoid of any Landau poles. Such principles if beyond the reach of LHC (TeV scale) can be tested via Gravitational Waves (GW) in LIGO, etc. As an example, we will discuss a QCD axion in the TAF scenario, with strong first order Peccei-Quinn phase transitions and produces GW.

Thus we will conclude by promoting RGE as a novel connection to complement laboratory searches of BSM with cosmological observables as probes of BSM models.

Author: GHOSHAL, Anish (University of Warsaw, Poland)

Presenter: GHOSHAL, Anish (University of Warsaw, Poland)

Session Classification: Alternative theories to SUSY