



Contribution ID: 223

Type: Talk

# Confinement, infrared screening of the QCD vacuum density and small cosmological constant

*Friday 3 August 2018 15:20 (20 minutes)*

The dynamical cancellation of the vacuum energy of the QCD sector in the infrared regime is a relevant problem for both particle physics and cosmology. We find an argument related to the existence of a  $Z_2$ -symmetry for the renormalization group flow derived from the bare Yang-Mills Lagrangian, and show that the cancellation of the vacuum energy may arise motivated both from the renormalization group flow solutions and the effective Yang-Mills action. At the cosmological level, we explore the stability of the electric and magnetic attractor solutions, both within and beyond the perturbation theory, and find that thanks these latter the cancellation between the electric and the magnetic vacua components is achieved at macroscopic space and time separations. This implies the disappearance of the conformal anomaly in the classical limit of an effective Yang-Mills theory and the emergence of novel space-time instanton-like objects with possibly important implications for real-time dynamics of QCD confinement.

**Authors:** PASECHNIK, Roman (Lund university); Dr MARCIANO, Antonino (Fudan U.); Dr ADDAZI, Andrea (Fudan U.)

**Presenter:** PASECHNIK, Roman (Lund university)

**Session Classification:** Vacuum structure and confinement

**Track Classification:** A: Vacuum structure and confinement