SEMINAR ZAVODA ZA TEORIJSKU FIZIKU

(Zajednički seminari Zavoda za teorijsku fiziku,
Zavoda za eksperimentalnu fiziku i Zavoda za teorijsku fiziku PMF-a)

One-loop form factors, multiplicative anomaly and galaxy rotation curves

Ilya L. Shapiro

Departamento de Fisica, ICE, Universidade Federal de Juiz de Fora
Juiz de Fora, CEP: 36036-330, MG, Brazil

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Mjesto: IRB, dvorana I krila

Sažetak:

We report on some recent results on the evaluation of quantum corrections to the classical actions of gravity and electromagnetic fields. In the last case we consider the one-loop QED in curved space time and find that the effective action in the electromagnetic sector possess an ambiguity, which can be characterized as the nonlocal multiplicative anomaly. Moreover, by analyzing different space-time dimensions we come to the understanding of the real origin of this theoretical phenomenon which should probably take place also in other theories. The mentionded ambiguity may concern the exact form of the Appelquist and Carazzone theorem, but the general form of the decopuling rule remains the same. In gravity, Appelquist and Carazzone theorem can be also derived explicitly, but only for the higher derivative terms in the action. It is remarkable that the assumption of a standard quadratic decoupling for the Newton constant leads to the very good prediction for the rotation curve for a sample of nine different spiral galaxies.

Voditelj seminara: Dr. Hrvoje Nikolić
⟨hrvoje@thphys.irb.hr⟩