

Institut Ruđer Bošković
ZAVOD ZA TEORIJSKU FIZIKU
Bijenička c. 54
ZAGREB, HRVATSKA

SEMINAR ZAVODA ZA TEORIJSKU FIZIKU
(Zajednički seminari Zavoda za teorijsku fiziku,
Zavoda za eksperimentalnu fiziku IRB-a i Fizičkog odsjeka PMF-a)

Electrodynamic Effects of Inflationary Gravitons

Dražan Glavan
Faculty of Physics, University of Warsaw

Datum: ponedjeljak, 10. srpnja 2017.
Vrijeme : **11 sati c.t.**
Mjesto: IRB, predavaona I krila

Abstract:

Our Universe went through a phase of very rapid, almost exponential expansion in its beginning, known as inflation. Such rapid expansion is known to lead to considerable particle production of non-conformally coupled quantum fields, even at tree level. Photons are conformally coupled to gravity and therefore do not get produced due to cosmological expansion, while gravitons are not and do get produced a lot. Since gravitons couple universally to all matter fields they can induce sizable effects for conformally coupled fields through loop corrections. I will present computations in two different gauges for the one-loop graviton corrections to photon vacuum polarization in de Sitter spacetime. This is used to quantum correct Maxwell equations, and I will present two cases, (i) correction to dynamical photons, and (ii) correction to the Coulomb force between two point charges. The corrections in both cases exhibit secular growth. Gauge dependence will be discussed.

Voditelj seminara:
Andjelo Samsarov
(asamsarov@irb.hr)