

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 i Zavoda za teorijsku fiziku PMF-a)

Quantum Gravity from the Quantum Field Theory Perspective

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SERIJA PREDAVANJA
će se održati na Institutu Rudjer Bošković u
predavaonici I krila

Srijeda, **27. ožujka** od **11.00** do **13.00**
Četvrtak, **28. ožujka** od **11.00** do **13.00**

Sažetak:

A short introductory and review course in perturbative Quantum Gravity. We describe the Lagrangian quantization and sketch the standard demonstration of diffeomorphism invariant renormalizability of the theory.

The analysis of power counting shows that there are possibilities for non-renormalizable, renormalizable and super-renormalizable models of Quantum Gravity, but in the last two cases we meet a problem of unphysical massive ghosts and unitarity of S-matrix for gravitons. Possible solutions of this problem are discussed, including some related to the effective approach to Quantum Field Theory (QFT). Alternative possibilities include various versions (in general, very different) of induced gravity and also treating Quantum Gravity as effective QFT at low energies. Some critical considerations concerning the last case are given.

Bibliography:

I.L. Buchbinder, S.D. Odintsov, I.Shapiro, Effective Action in Quantum Gravity (1992), IOPP.

I.Shapiro, Class. Quant. Grav. 25 (2008) 103001 (Topical review); arxiv:0801.0216.

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