

Seminarium Zakładu Fizyki Teoretycznej

Departament Badań Podstawowych
Narodowego Centrum Badań Jądrowych

3 March 2021 (Wednesday), h. 11:15

The seminar is held online:

https://www.gotomeet.me/NCBJmeetings/bp2_seminar

Andrzej Goerlich

(Jagiellonian University)

"Cosmic voids and filaments from quantum gravity"

ABSTRACT: Causal Dynamical Triangulations (CDT) is a background-independent and diffeomorphism-invariant approach to quantum gravity. The framework does not involve any coordinate system and employs only geometric invariants. It provides a lattice regularization of the formal gravitational path-integral, allowing for computer-supported studies of the geometry of a typical quantum universe. We display it using coordinates defined via classical scalar fields satisfying the Laplace equation with non-trivial boundary conditions. The introduction of boundaries is possible due to the ability to control within CDT the topology of the Universe and to fix the toroidal spatial topology. The field configurations reveal cosmic web structures surprisingly similar to the ones observed in the present-day Universe.

Best regards,

T. Altinoluk, M. Kowal, P. Małkiewicz, E. Sessolo, P. Zin