

Seminarium Studium Doktoranckiego NCBJ

Thursday, 17 December, 9:00

<https://www.gotomeet.me/NCBJmeetings/phd-seminar>

Speaker:

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Title:

Introduction to Emergent Gravity Paradigm and Emergence of Cosmic Space

Abstract:

On the backgrounds of connections between gravity and thermodynamics, the emergence of cosmic space as cosmic time progresses is an exciting idea advanced by Padmanabhan to explain the accelerated expansion of the universe. The generalisation of Padmanabhan's conjecture to the non-flat universe has resulted in scepticism about the choice of volume such that the law of emergence can not be appropriately formulated if one uses proper invariant volume. The deep connection between the first law of thermodynamics and the law of emergence, motivate us to explore the status of the first law in a non-at universe when one uses proper invariant volume. We have shown that the first law of thermodynamics, $dE = TdS + WdV$ cannot be formulated properly for a non-flat universe using proper invariant volume. The failure in formulating the first law of thermodynamics with invariant volume hints to why our universe is spatially flat.

In this talk, I will give a brief introduction to the emergent gravity paradigm and its application in cosmology.