

Copernicus Webinar and Colloquium Series



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Is our Universe geometrical after all?

Tuesday 6 December 2022 15:00 (1h 20m)

After decades, we still lack a proper understanding of the quantum nature of gravity. Nonetheless, we have already seen many theoretical hints that gravity does not easily fit in the quantum mechanical framework. In this talk, I will discuss the issues associated with gravitating vacuum energy and take that as empirical evidence of the breakdown of QFT in the presence of gravity. Then, I will argue for a radical alternative where space(-time) is completely emergent from quantum mechanics alone, defined for finite-dimensional Hilbert spaces. After briefly reviewing how spacetime can be emergent, I will sketch a new research program that establishes experimental signatures to test the emergent nature of spacetime.

Presenter: FRANZMANN, Guilherme (Nordita)