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# (I) Quantum gravity with emergent spacetime

*Tuesday 20 June 2023 09:45 (30 minutes)*

In this talk, we will discuss a model of quantum gravity in which dynamical spacetime arises as a collective phenomenon of underlying quantum matter. In the model, the pattern of entanglement formed across local Hilbert spaces determines the dimension, topology and geometry of an emergent spacetime. After discussing the general structure of the model, we will describe the dynamics of a semi-classical solution that describes a (3+1)-dimensional de Sitter-like spacetime with the Lorentzian signature. Small fluctuations around the semi-classical solution include the propagating gapless graviton.

## Keyword-1

emergent spacetime

## Keyword-2

quantum gravity

## Keyword-3

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