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## Emergent Cosmology from Quantum Gravity

*Thursday 22 June 2023 09:00 (15 minutes)*

I show, within the Group Field Theory (GFT) approach to quantum gravity, how cosmological physics emerges from the collective behavior of spacetime quanta, in what can be understood as the hydrodynamic limit of the underlying quantum gravity theory. In particular, I discuss explicitly how two of the most important challenges in quantum gravity (the problem of the continuum limit and the problem of time) are explicitly addressed in this framework. I finally review and summarize the main properties of the emerging quantum cosmological physics, emphasizing in particular: the initial singularity resolution into a quantum bounce; the presence of an alternative, purely quantum geometrical, inflationary mechanism; and the impact of quantum gravity effects on the dynamics of cosmological perturbations.

### Keyword-1

Quantum Gravity

### Keyword-2

Cosmology

### Keyword-3

Quantum Cosmology

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