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Cosmology from Quantum Gravity

Tuesday 14 June 2016 16:15 (30 minutes)

I will explain how the large-scale cosmological dynamics can be obtained from the hydrodynamics of condensate states of quantum gravity (to be specific, isotropic group field theory condensate states in the Gross-Pitaevskii approximation). The correct Friedmann equations are recovered in the semi-classical limit for appropriate choices of the parameters in the action for the group field theory, and quantum gravity corrections arise in the high-curvature regime causing a bounce which generically resolves the big-bang and big-crunch singularities.

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