Contribution ID: **15** Type: **not specified**

Phantom-like dark energy from quantum gravity

Wednesday 8 September 2021 11:00 (20 minutes)

We analyse the emergent cosmological dynamics corresponding to the mean field hydrodynamics of quantum gravity condensates, in the tensorial group field theory formalism. We focus in particular on the cosmological effects of fundamental interactions, and on the contributions from different quantum geometric modes. The general consequence of such interactions is to produce an accelerated expansion of the universe, which can happen both at early times, after the quantum bounce predicted by the model, and at late times. Our main result is that, while this fails to give a compelling inflationary scenario in the early universe, it produces naturally a phantom-like dark energy dynamics at late times, compatible with cosmological observations. By recasting the emergent cosmological dynamics in terms of an effective equation of state, we show that it can generically cross the phantom divide, purely out of quantum gravity effects without the need of any additional phantom matter. Furthermore, we show that the dynamics avoids any Big Rip singularity, approaching instead a de Sitter universe asymptotically.

Primary authors: Dr ORITI, Daniele (LMU Munich); PANG, Xiankai (LMU Munich)

Presenter: PANG, Xiankai (LMU Munich)

Session Classification: CoCo