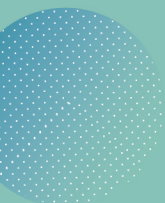




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Global variables and dynamics of emergent cosmology in loop gravity

by I. Garay, et al. (including Luis J. Garay)

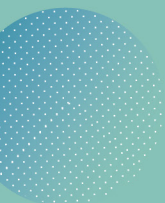
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Abstract

Deriving emergent cosmology from the discrete geometry of Loop Quantum Gravity remains an open challenge. We solve the two-vertex model exactly, including general non-symmetric configurations, by introducing macroscopic global variables that form a closed Poisson subalgebra. This yields an intrinsic minimal area gap from the Casimir invariants of the subalgebra. In the semiclassical limit, a generalized Friedmann equation emerges incorporating graph anisotropies and quantum geometry corrections, which lead to a Big Bounce. This global formulation opens a coarse-graining route toward statistical descriptions of quantum spacetime.

