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Cosmology from Holography

Wednesday 11 June 2025 14:15 (30 minutes)

We describe how the holographic approach to quantum gravity might be used to give a full-fledged quantum gravity description of big-bang cosmology. The resulting cosmological models have a negative cosmological constant but can generically explain late-time acceleration due to the potential energy of time-dependent scalar fields associated with relevant scalar operators in the CFT. If such models can describe realistic cosmology, they would predict time-dependent dark energy that decreases and eventually switches sign, leading to a big crunch. We show that such decreasing dark energy is consistent with and perhaps even preferred by scale factor evolution data deduced from supernova and BAO observations.

Keyword-1

Holography

Keyword-2

Cosmology

Keyword-3

Quantum gravity

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