

Lattice gravity

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Lattice quantum field theory has been very successful as a tool to study non-perturbative aspects of quantum field theory. These lectures describe how the QUANTUM theory of General Relativity can also be formulated as a lattice theory. It is (very) successful in the case of two-dimensional spacetimes. There are several ways to generalize the two-dimensional lattice theory to higher dimensions, but amazingly they lead to the same modified Friedmann equation that seems to resolve all tension present between early time and late time cosmological data. The modified Friedmann equation has no cosmological constant. Instead the present expansion of the universe is caused by the creation of baby universes and links the dynamics of the very early universe to its final destiny.

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