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# Diffusive effects of Planckian discreteness: the thermal bath of quantum-gravity defects

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The concept of spacetime discreteness is a common feature in quantum gravity theories. Recently, it has been speculated that the presence of discrete fundamental degrees of freedom should ultimately manifest, at least in the low-energy regime, in the form of diffusive effects, just as the presence of molecules generates diffusion in fluids. As for an effective description, such dissipation effects can be accounted for in the framework of Unimodular Gravity (UG). Given a specific model of diffusion, UG predicts precise deviations from standard cosmology that can be tested even with current or foreseeable observations, making these models relevant for the quantum gravity phenomenology programme. It can be shown that well-defined diffusion in UG is formally obtained by introducing the 'quantum-gravity defects': hidden degrees of freedom that play the role of an effective thermal bath in which matter fields can dissipate energy. In this formalism, modeling diffusion corresponds to selecting an appropriate action for the defects. Interestingly, this seems to allow for the definition of a novel notion of temperature of spacetime.

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