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Gravitational entropy and the cosmological "no-hair" conjecture

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Gravitational entropy and the cosmological "no-hair" conjecture

Gravitational entropy [1] and the "no-hair"conjectures [2, 3] are seemingly contradictory: the growth of the first one is associated with the growth of inhomogeneity [4, 5, 6], while the second one argues that the dark energy dominated Universe will asymptotically approach a homogeneous and isotropic de Sitter state[7, 8]. In my talk I will present the analysis of both of these conjectures within the silent universes [9, 10]. Irrotational silent universes belong to a class of systems where each worldline evolves independently of other worldlines - there is no communication between the worldlines, i.e. no pressure gradients, no energy flux, no gravitational radiation. In my talk I will discuss properties and evolution of the irrotational silent universe. I will focus on the gravitational entropy and future asymptotic state of the silent universe dominated by dark energy [11]. Finally, I will comment on the gravitational entropy of gravitational waves.

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