



High Energy Physics - Theory

Viscous Little Rip Cosmology

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Dark energy of phantom or quintessence nature with an equation of state parameter w almost equal to -1 often leads the universe evolution to a finite-time future singularity. An elegant solution to this problem has been recently proposed [frampton11] under the form of the so-called Little Rip cosmology which appears to be a realistic alternative to the Λ CDM model. A viscous Little Rip cosmology is here proposed. Whereas generically bulk viscosity tends to promote the Big Rip, we find that there are a number of situations where this is not the case and where the formalism nicely adjusts itself to the Little Rip scenario. We prove, in particular, that a viscous fluid (or, equivalently, one with an inhomogeneous (imperfect) equation of state) is perfectly able to produce a Little Rip cosmology as a purely viscosity effect. The possibility of its induction as a combined result of viscosity and a general (power-like) equation of state is also investigated in detail. To finish, a physical, inertial force interpretation of the dissolution of bound structures in the Little Rip cosmology is presented.

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