Stability of FRW Cosmology with Generalized Chaplygin Gas
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abstract We apply methods of dynamical systems to study the behaviour of universe dominated by the
generalized Chaplygin gas. We reduce the dynamics to a 2–dimensional Hamiltonian system and study its
behaviour for various ranges of parameters. The dynamics is studied on the phase plane by using methods
of qualitative analysis of differential equations. The behaviour of trajectories at infinity is studied in some
convenient coordinates introduced on the phase plane. Hence we shown that FRW model with the generalized
Chaplygin gas is structurally stable. We clearly find the domains of cosmic acceleration as well as conditions
for which the horizon problem is solved. We also define some general class of fluids which generalize the
Chaplygin gas. The dynamics of such models in terms of energy conditions is also discussed.