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Qualitative Investigation of the Cosmological Model in the Presence of a Conformally Coupled Scalar Field

Among currently existing approaches to solve the problem of accelerated expansion of the Universe at various stages of the evolution, a special attention is paid to cosmological models in the presence of various scalar fields. In the present work we consider a model with a non-minimal interaction term $\psi^2 R$ in the Lagrangian density (ψ is a scalar field, R is the scalar curvature). The latter is obtained as a result of Beckenstein transformations within the framework of the Jordan-Brans-Dicke theory. The system of gravitational equations for such a problem is represented in the form of an autonomous dynamical system, which allows us to use the method of the qualitative theory of dynamical systems. We consider a cosmological vacuum model with the equation of state $P = -\epsilon$, actually, the inflationary model of evolution, as well as the recent epoch with the predominance of dust matter. As a result, a qualitative analysis of the results is carried out.

Type of contribution

Talk

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