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Cosmological models with non-minimal derivative coupling[1]
SERGEY SUSHKOV, California State University, Fresno and Kazan Federal University, Kazan, Russia — We investigate cosmological scenarios with a non-minimal derivative coupling between the scalar field and the curvature, examining both the quintessence and the phantom cases with zero and constant potentials. In general, we find that the universe transits from one de Sitter solution to another, determined by the coupling parameter. Furthermore, according to the parameter choices and without the need for matter, we can obtain a Big Bang, an expanding universe with no beginning, a cosmological turnaround, an eternally contracting universe, a Big Crunch, a Big Rip avoidance and a cosmological bounce. This variety of behaviors reveals the capabilities of the present scenario.

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