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The predictions of inflationary models modified by a non-minimal coupling between the scalar field and curvature

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Possible corrections to cosmological inflation models based on scalar-tensor gravity are considered. The influence of non-minimal coupling between a scalar field and curvature on cosmological dynamics and parameters of cosmological perturbations is examined, with particular emphasis on corrections arising from a specific parametrization of this coupling.

Cosmological models based on physically motivated scalar field potentials are analyzed for various non-minimal coupling functions, encompassing cases in which the influence of the coupling on both the cosmological dynamics and the evolution of the scalar field is either significant or negligible.

Special attention is devoted to estimating deviations of scalar-tensor gravity models from the Einstein gravity case. These deviations are assessed by applying modern constraints on the parameters of cosmological perturbations. To provide a model-independent analysis of the corrections induced by non-minimal coupling, a classification of inflationary scenarios is introduced. This classification is based on the series expansion of the tensor-to-scalar ratio as a function of the spectral index of scalar perturbations. It is shown that the proposed approach incorporates well-known inflationary models as special cases.

Primary author(s) : DENTSEL, Evgenii (Assistant professor); FOMIN, Igor (Bauman Moscow State Technical University); CHERVON, Sergey (Ulyanovsk State Pedagogical University)

Presenter(s) : DENTSEL, Evgenii (Assistant professor)

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