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The use of the effective potential for construction of inflationary models with the Gauss-Bonnet term

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We investigate inflationary dynamics in the framework of the Einstein-Gauss-Bonnet gravity using the effective potential. In the model under consideration, the inflaton field is non-minimally coupled to the Gauss-Bonnet curvature invariant, so that the latter appears to be dynamically important. We consider a quartic potential for the inflaton field, in particular the one asymptotically connected to the Higgs inflation, and a class of coupling functions not considered in the earlier works. Keeping in mind the observational bounds on the parameters - the amplitude of scalar perturbations A_s, spectral index n_s and tensor-to-scalar ratio r, we demonstrate that the models with a quartic potential and the proposed coupling functions are in agreement with observation. The talk is based on the paper by E.O. Pozdeeva, M. Raj Gangopadhyay, M. Sami, A.V. Toporensky, S.Yu. Vernov, Phys. Rev. D 102 (2020) 043525 [arXiv:2006.08027].

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