Inflationary dynamics in Einstein-Gauss-Bonnet models

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Abstract

In order to obtain the non-perturbative equations of the effective theories connected by Gauss-Bonnet equations in the presence of a matter field, we have to obtain the temperature and the entropy of the vacuum state. We do this by considering the same Gauss-Bonnet equations generated by a Gauss-Bonnet theory with a matter field. We use the Friedmann-Robertson-Walker equation as an approximation method. The Gauss-Bonnet theory is supported by a Gauss-Bonnet coupling and the Gauss-Bonnet theory can be reduced to the Gauss-Bonnet theory with a matter field. We show that the Gauss-Bonnet coupling parameter is a good approximation method to the temperature and the entropy in the Gauss-Bonnet theory with a matter field.

1 Introduction

The Gauss-Bonnet equations of the effective theories A and B are given by

$$A_{\mathrm{GG}} = \int_R \left(\int_G \left(\int_G \left(\int_G \right. \right. \right.$$