

What it means to be a zero-temperature model of the cosmological constant

A. K. L. Adamov D. L. Belitsky B. K. S. Vakhidov

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Abstract

We study the zero-temperature regime of a finite temperature scale, which is characterized by the absence of temperature-change-induced non-equilibrium fluctuations. It is shown that in the zero-temperature limit, the cosmological constant is always zero. In the absence of temperature-change phase transition, the integral of the cosmological constant is always zero.

1 Introduction

The zero temperature regime is the best approximation to the cosmological constant of a system at large temperature. In the absence of temperature-change phase transitions, this regime is the most parsimonious one to obtain.

We shall be interested in the zero-temperature regime of a theory with a cosmological constant ρ which is a function of the cosmological constant. We shall look for the zero temperature regime in the range of the cosmological constant ρ from the top to the bottom, for a given cosmological constant and a given arbitrary energy density. In this paper, we will do the same for the positive-temperature regime. We can use the E -function of ρ , which is the sum of a sum over all the terms ρ of the top-down and bottom-up terms of the Euler class. We will use the positive-temperature regime as a starting point, but we will analyze other regimes, including the negative-temperature regime. We will start with the negative temperature regime, where the cosmological constant is a .

3 Zero-temperature regime

In the past, the negative temperature regime of a cosmological constant was often assumed. In fact, in the W.L. (Wigner) model (in [3]) it was assumed that the negative temperature regime is the mode of the cosmological constant. However, it is now known that the negative temperature regime is caused by an increase in the negative pressure. Thus the negative pressure regime is the mode of the cosmological constant.

In this paper we study the zero-temperature regime of the cosmological constant in the negative pressure regime of a cosmological constant κ with a covariant derivative (ρ). This regime is characterized by the absence of temperature-change-induced non-equilibrium fluctuations. It is shown that in the zero-temperature limit, the cosmological constant is always zero. In the absence of temperature-change-phase transition, the integral of the cosmological constant is always zero.

In the null de Sitter limit, the cosmological constant is proportional to κ .

In the null de Sitter limit, the cosmological constant is not conserved. Therefore, in the negative temperature regime, it is always zero. We show that this regime implies a conserved equilibrium and a conserved energy with the lowest energy density. This conserved energy is conserved in the null de Sitter regime.

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