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SOME OF TOPOLOGICAL AND METHODOLOGICAL ASPECTS OF QUANTUM COSMOLOGY MODELS

Summary

In this paper we address some critical remarks to two leading models quantum cosmology – Hawking-Hartle model and Vilenkin model. Both models appeal to different mathematical frameworks to reconstruct of first moments of Universe evolution. The first one presents wave function of the Universe using Feynman’s formalism of quantum mechanics — path integrals. The other one shows the beginning of the Universe as quantum tunneling process. The authors of above mentioned approaches to quantum cosmology claims, that these mechanisms describe creation of the Universe *ex nihilo*. The main aim of this paper is to show a weakness of such interpretations. Firstly, Gordon McCabe’s criticism is presented. His analyses are based on topological concept of cobordism. In the second step, we show that the concept of *ex nihilo* should be rather understood as “zero-point-geometry” with a material field.

Summarised by Authors

Słowa kluczowe: kosmologia kwantowa, kobordyzm.

Key words: quantum cosmology, cobordism.

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