

# The Concept of Infinity in Modern Cosmology

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## Abstract

The aim of this paper is not only to deal with the concept of infinity, but also to develop some considerations about the epistemological status of cosmology. These problems are connected because from an epistemological point of view, cosmology, meant as the study of the universe as a whole, is not merely a physical (or empirical) science. On the contrary it has an unavoidable metaphysical character which can be found in questions like “why is there this universe (or a universe at all)?”. As a consequence, questions concerning the infinity of the universe in space and time can correctly arise only taking into account this metaphysical character of cosmology. Accordingly, in the following paper it will be shown that two different concepts of physical infinity of the universe (the relativistic one and the inflationary one) rely on two different ways of solution of a metaphysical problem. The difference between these concepts cannot be analysed using the classical distinctions between actual/potential infinity or numerable/continuum infinity, but the introduction of a new “modal” distinction will be necessary. Finally, it will be illustrated the role of a philosophical concept of infinity of the universe

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