

Time before Time - Classifications of Universes in contemporary cosmology, and how to avoid the antinomy of the beginning and eternity of the world

Vaas, Ruediger (2004) Time before Time - Classifications of Universes in contemporary cosmology, and how to avoid the antinomy of the beginning and eternity of the world.

Full text available as:

[PDF](#) - Requires a viewer, such as [Adobe Acrobat Reader](#) or other PDF viewer.

Abstract

Did the universe have a beginning or does it exist forever, i.e. is it eternal at least in relation to the past? This fundamental question was a main topic in ancient philosophy of nature and the Middle Ages. Philosophically it was more or less banished then by Immanuel Kant's Critique of Pure Reason. But it used to have and still has its revival in modern physical cosmology both in the controversy between the big bang and steady state models some decades ago and in the contemporary attempts to explain the big bang within a quantum cosmological framework. This paper has two main goals: First a conceptual clarification and distinction of different notions of "big bang" and "universe" is suggested, as well as a multiverse taxonomy and a classification of initial and eternal cosmologies. Second, and with the help of this analysis, it is shown how a conceptual and perhaps physical solution of the temporal aspect of Immanuel Kant's "first antinomy of pure reason" is possible, i.e. how our universe in some respect could have both a beginning and an eternal existence. Therefore, paradoxically, there might have been a time before time or a beginning of time in time. -

Keywords: cosmology, big bang, big crunch, universe, multiverse, time, general relativity, quantum cosmology, loop quantum cosmology, string cosmology, world models, quantum vacuum, cosmic inflation, anthropic principle, closed timelike loops, Abhay Ashtekar, Hans-Joachim Blome, Martin Bojowald, George F. R. Ellis, Maurizio Gasperini, John Richard Gott III, Alan Guth, Jim Hartle, Stephen Hawking, Mark Israelit, Claus Kiefer, Li-Xin Li, Andrei Linde, Wolfgang Priester, Eckhard Rebhan, Paul Steinhardt, Neil Turok, Gabriele Veneziano, Alexander Vilenkin, H. Dieter Zeh.

›

Keywords: cosmology, big bang, big crunch, universe, multiverse, time, general relativity, quantum cosmology, loop quantum cosmology, string cosmology, world models, quantum vacuum, cosmic inflation, anthropic principle, closed timelike loops, Abhay Ashtekar, Hans-Joachim Blome, Martin Bojowald, George F. R. Ellis, Maurizio Gasperini, John Richard Gott III, Alan Guth, Jim Hartle, Stephen Hawking, Mark Israelit, Claus Kiefer, Li-Xin Li, Andrei Linde, Wolfgang Priester, Eckhard Rebhan, Paul Steinhardt, Neil Turok, Gabriele Veneziano, Alexander Vilenkin, H. Dieter Zeh

Subjects: [Specific Sciences: Physics: Cosmology](#)

ID Code: 1910

Deposited By: [Vaas, Ruediger](#)

**Deposited
On:**

17 September 2004

**Additional
Information:**

This is an extended and updated version of:

Vaas, R.. 2003: Time before Time: How to Avoid the Antinomy of the Beginning and Eternity of the World. In: Löffler, W., Weingartner, P. (eds.): Knowledge and Belief. Papers of the 26th International Wittgenstein Symposium. Austrian Ludwig Wittgenstein Society. Kirchberg am Wechsel, pp. 351-353.

It is based on lectures given on January 23th 2003 at the University of Stuttgart, Germany, on August 4th 2003 at the 26th International Wittgenstein Symposium in Kirchberg am Wechsel, Austria, and on September 25th 2003 at the GAP.5 Philosophy and Science conference in Bielefeld, Germany.

Send feedback to: philsci-archive@library.pitt.edu