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Conformal Cyclic Cosmology

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Abstract

According to conformal cyclic cosmology (CCC), what we presently regard as the entire history of the Universe, from its Big-Bang origin (but without inflation) to its final exponential expansion, is merely one aeon of a continual succession of such aeons. The big bang of each is taken to be a smooth conformal continuation of the remote future of the previous one via an infinite conformal rescaling, there being no collapsing phase. The 2nd Law of thermodynamics, with the curious nature of its origin, is automatically incorporated, Hawking evaporation of black holes providing a key ingredient. Inflation is replaced by the exponential expansion of the previous aeon. To express CCC mathematically we need a formulation of Einstein's equations extending over the crossover joining each aeon to the next. The general ideas for doing this will be briefly described, the evolution being governed by entirely classical equations, in contrast with the conventional view that quantum fluctuations are responsible for primordial irregularities in our early universe. Events involving super-massive black holes in the aeon previous to ours have important observational implications, and the evidence for this will be described.

Mércores 23 de novembro de 2011, 12h – Aula Magna