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WHEN DID THE BIG BANG HAPPEN?

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The famous 10^{-43} seconds before the Universe got out of the physical singularity (Planck's state) have no physical and logical sense. We need to come back to the concept of infinite (or indefinite) age of the Universe.

KEY WORDS Cosmological singularity, age of the Universe

The “beginning” of the Big Bang is usually fixed on the evolution scale of the Universe as $\sim 10^{43}$ seconds before the Universe got out of the physical singularity (Planck's state). It is known that our physics cannot be used before this moment. So how does the fixed moment of the beginning of the Planck's phase appear? The answer is simple: we just calculate this moment (which belong to the epoch when the General Relativity Theory, GRT, cannot be used), using the GRT model of the Universe. This “method” of locating the singularity (detection of the moment of the Big Bang) is witty in Odessa way or very naive... Of course the estimate of the duration of the Planck's epoch, the famous $\sim 10^{-43}$ seconds, has no sense. This estimate may be in error in any way: by 10% or in $10^{100!}$ times or even by an infinite number of still times. For example, if we decrease it only (!) by 10^{100} times (which is still much less than ∞ ...), then, after this correction, we could receive $\sim 10^{40}$ ages of the Metagalaxy instead of $\sim 10^{-43}$ sec for the duration of the Planck's prehistory of the Universe. So the duration of this phase (if only the concept of duration can be used in a physical singularly state) can exceed 10^{-43} sec by many times. This means that we need to come back to the concept of the infinite age of the Universe. This conclusion applies also to the standard Fridman's model of the Universe (including Gamow's version of the hot Universe) and its primary inflation generalization. In the following scenario of “chaotic inflation”, the conclusions described above are correct in their construction, because “. . . the evolution of the Universe as the whole . . . can have no beginning” (A. D. Linde, 1990).

References

Linde, A. D. (1990) *Physics of Elementary Particles and Inflationary Cosmology*, Moscow, Science, p. 57 (in Russian).