

Consequences of Hawking's Complex Time

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ABSTRACT: The consequences of the Hawking complex time have been discussed. One has stated that, according to Special Relativity, it is a proof for an enlargement of the Universe with the velocity $v > c$. It means too that the statement that the principles of physics weren't valid for the very small time after the Big Bang, is perfect nonsense.

According to the results of S. W. Hawking [1] the time has been expressed by a complex number in our Universe after the Big Bang. The statement that the laws of physics hadn't been valid for smaller than 10^{-41} s after the Big Bang is perfect nonsense. Why shouldn't the laws of physics work then as a matter of fact?

Simply our Universe had expanded then with the velocity $v > c$ what Special Relativity foresees.

The enlarging Universe transformed from the state described by $v > c$ to the state described by $v < c$, so the crossing the velocity $v = c$ (called imprecisely "velocity of light") is possible at least in one direction.

The curved time corresponds to the conception of time as a field of charges and interactions [2]. Such a field must be curved naturally.

Moreover, the time-like currents [3] exist and can be interpreted as motion of charges in the generalized field of charges and interactions.

Black holes emit radiation. A fragment of the Universe can be so curved that nothing emerges it. Nevertheless, the tunneling to other Universes exists then through the black holes. Every elementary particle can be such a black hole.

The Hawking considerations implicate that $\tau = it$. As well $\tau = -it$ it can be equally good. We avoid the singularities in both cases.

However, the limiting potentials [4] resist the motion backwards the time implicated by the fundamental equations of physics.

References:

- [1] S. W. Hawking, R. Laflamme, *Physics Letters B*, vol. 209, no. 1; 28. July 1988, p. 39
- [2] Z. Morawski, "Attempt at Nature of Time", this website
- [3] I. Bars, D. Nemeschansky, *Nuclear Physics B* 348 (1991), p. 89-107
- [4] Z. Morawski, "Mathematical Models of Restrictive Potentials"; "Statistical or Classical Reality", this website