The parallel universes with common Past

Alexander K. Guts

Department of Computer Science, Omsk State University, 644077 Omsk, Russia
E-mail: guts@univer.omsk.su

The problem of interaction by means of the macroscopic fluctuations of topology between our Universe and "parallel" universe is discussed.

Amplitude of probability of transition from Universe F_0^4 to universe F_1^4 will represent by means of Feynman integral over 5-geometries:

$$< F_0^4 | F_1^4 >= \int_{F_0^4}^{F_1^4} \mathcal{D}g^{(5)} \exp\left[-\frac{iS}{\hbar}\right], \tag{1}$$

where

$$S = \frac{c^3}{8\pi GT} \int R^{(5)} \sqrt{-g^{(5)}} d^5x \tag{2}$$

is action in five-dimensional Lorentz geometry with metrics $g_{AB}^{(5)}$, moreover T is a constant with dimensionality [cm], connected with 5-th coordinate (for instance, it characterizes cyclicity on the fifth coordinate in the Kaluza-Klein theories). From (1), (2) it follows that fluctuations of five-dimensional geometries $g_{AB}^{(5)}$ $(A, B = 1, ..., 5)$:

$$\Delta g^{(5)} \sim \frac{L^*}{L} \sqrt{\frac{T}{L_0}}, \tag{3}$$

do not give an interference that distorts the full picture. Here $L^* \sim 10^{-33} cm$ is constant of Plank, and $L^4 \times L_0$ is a size of 5-region of fluctuations.

Formula (3) means that as soon as Past of universes F_0^4 and F_1^4 are approached "sufficiently close" in 5-dimensional manifold, quantum fluctuations of metrics begin to change topology and geometry of two universes; they begin to stick together by means of wormholes; one will appear the tunnel transition between worlds. This means that at least on the microscopic scale the Past of these two worlds are indistinguishable.

We constructed a model of five-dimensional Lorentz manifold with foliation of codimension 1 the leaves of which are four-dimensional space-times. The Past of these space-times can interact in macroscopic scales. Hence, it is possible that our Human History consists of "somebody else's" (alien) events [2].

The model is five-dimensional manifold that is got by multiplying on $\mathbb{R}^3$ of axial section of foliation of Reeb in the torus $S^1 \times D^2$ ([3, 468], refer to Pic.1).

References

[1] Guts, A.K. Interaction of the Past of parallel universes. - Los Alamos E-print Paper: physics/9910037 (1999).

[2] Guts, A.K. Mani-variant History of Russia. M.:AST/St.Peterburg:Poligon,2000.(Russian)

[3] Fomenko, A.T., Fuks, D.B. Course of homotopic topology. – Moscow.: Nauka Publ., 1989. (Russian)