The relation of uncertainty for radius of the universe, determined by the speed of disorganization of events in space-time

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In cosmology a special role one play the Robertson-Walker's solutions of the form

$$ds^2 = dt^2 - R^2(t)[d\chi^2 + S^2(\chi)d\Omega^2].$$

Here the time parameter t is directly connected to postulation of evolution of the universe, and, hence, any varied property of the universe plays a role of hours (for example, as time coordinate it is possible to take temperature of microwave background radiation etc.) [1, c.312-313.]

Assume that we choose hours t which allow each event x to attribute the moment of time which appropriates to its, i.e. epoch τ. We shall accept, that epoch which is attributed to event *is random variable*. It is understood as the following. So far as event is some idealization behind which some natural phenomenon in general it occupies only an instant τ in a time-stream t, but actually it *is stretched in a time-stream* t and consequently its epoch τ is absolutely precisely unknown, though should lie on some concrete piece $[\tau, \tau + \Delta\tau]$ of time t. By virtue of told, epoch τ of event x is a random variable $\tau :< X, \mathbf{S}, \mathbf{P} >\rightarrow \mathbb{R}$, where X is a probability space of events, $\mathbf{S}$ is σ-algebra on X, $\mathbf{P}$ is probability measure on X. Identifying space of events X with the World of events $\mathcal{M}$ and assume that $\mathcal{M}$ is a straight line $\mathbb{R}$ (it is simplified point of view which is consequence of the fact that t defines linear temporal ordering in space-time) we receive time-epoch $\tau = \tau(t)$ as a random variable given in a time-stream t with density of probability $f_\tau(t)$.

The relation of uncertainty for mean square derivations takes place

$$\Delta\tau\Delta D \geq c_1.$$

Here

$$D(t) = c_1 \frac{d}{dt} \ln f_\tau(t), \tag{1}$$

where $c_1 = const$. Let's find out sense of D from (1). As $f_\tau(t)$ is density of distribution of epoch τ its sense is probability of that event will receive the epoch laying on an interval of time-stream $[t, t+1]$, where 1 is a standard unit of measurement of time. By analogy to the Boltzmann's formula for entropy, it is possible to declare, that $\ln f_\tau(t)$ is entropy of time-epoch. In other words, it characterizes a measure of disorganization of event, as the phenomena. Therefore the $D(t)$ characterizes *speed of increase of disorganization* the event-phenomena.

If to admit that the radius $R = R(\tau)$ of the universe is a random variable which is similar to time-epoch τ, and which can be calculated by means of known methods [2, c.43-49], then mean square derivation ΔR will receive through $\Delta\tau$. We shall get the relation of "uncertainty" connecting ΔR and ΔD. Value of measured radius of the Universe will depend on such characteristics of the universal phenomena (events) as speed of their becoming or destruction.

1. Burke, W.L. Spacetime, Geometry, Cosmology. - Mill Valley, California,,1980.
2. Levich, B.R. Theoretical foundation of statictical radiotechnics. - M.: Radio & Svyaz',1989.