

Review of: "On the cosmological arrow of time"

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*Suggestions and comments for the article entitled: **On the cosmological arrow of time**,*

By: Andreas Henriksson

In the nature we have several different concept of the `time`. Some of them are: cosmic time, biologic time, entropic time and etc. The cosmic time is related to scale of expanding universe. Biologic time is related to life span of living organisms. The entropic time is related to positivity condition of entropy variation of the thermodynamic systems. This paper dedicated to the cosmological arrow of time in a static universe which is generated by increase of particle masses. In the latter perspective one can result that the universe has not beginning time and will not ending time. In fact philosophical point of view of this paper is as follows: There is set of minima in the effective potential of a symmetry-broken quantum field theory represents physically coexisting groundstates in which the time is flow of instanton energy from groundstates with higher energy density to groundstate with lower energy density.

In fact this assumption is similar to `Everett`s many worlds` model or similar to the Hawking`s multiverse model which are connected with wormholes apparently and they use usually in the well known Schrodinger`s cat experiment. The latter models have also essential problems which are given in the literature. The model presented in this work is strongly dependent on philosophical assumption, namely increasing the mass of particles. Really, the author should compare many observations in physics that have been tested and they are explained with known physical models and with experience, and prove the validity of this model with more samples. The fact is that for more than 100 years, atomic physics has delivered the originality from mass to atoms and fundamental particles, even the decay of radioactive materials is logically and comprehensibly understood by quantum theory. Of course, by regarding the Heisenberg's uncertainty principle, while the current model returns originality to mass, instead of the atom. In fact author should determine what is particle? who defines in his article which always absorbs the energy to increase its mass. What does this model say about stars of burning that repel matter or energy? Do the sun or stars absorb energy and increase their mass?! Or do they radiate and lose energy through the fusion process of mass elements? The author should really enrich this article, which in my opinion is crude, with strong arguments. Another point is that the topic of cosmology has expanded so much that the article with only 2 sources seems to be poor and needs to increase the resources in proportion to develop the idea by expressing more arguments, although the beauty of the idea cannot be denied. But why we should assume the Universe is static at large scales?. Do detected at least one observational signal to this? That may be positive answer but i do not know. On the other side we have several conserved quantities in the nature which is

maintained as conserved quantities when the elementary particles interact with each others, for instance `angular momentum, spin, parity, electric charge and etc . Why the author restricts the work just to conservation of energy together with second law of thermodynamics?.