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Transformation of Neutron Black Holes into Expanding Hot Plasma

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Abstract: According to the Scale-Symmetric Theory (SST), before the expansion of the Universe, almost all baryon matter was in the form of neutron black holes (NBHs) clustered in protogalaxies. Here, on the basis of the SST cosmology, we present the mechanism that caused most of the matter in NBHs to end up outside the Schwarzschild surfaces of the protogalaxies in the form of high-energy plasma. The main reason was the violent collisions of dark matter (DM) with NBHs that started the expansion of the Universe. The too high abundance of gold suggests that number of collisions of NBHs was much higher than it is assumed in mainstream cosmology. On the other hand, the inflow of dark energy has forced the galaxies to continue moving away from each other, but also to increase the size of the galaxies. It is a verbal description with references to mathematical techniques.

The Galactic chemical evolution (GCE) models make it possible to predict the origin of elements as a function of time and environment. First of all, we have a problem with gold, which is overproduced by a factor of 5 compared to the predictions of the GCE models [1]. It is known that gold is created in collisions of neutron stars (NSs), but, according to the mainstream Big Bang, there were not enough of them to produce the observed amount of gold.

So we have a promise to prefer models that exclude the possibility of turning neutron stars into black holes (BHs) with a central singularity and to prefer models that postulate a much larger number of NSs at the beginning of the expansion of the Universe. Both conditions are satisfied by the SST.

Such ideas as “neutron black holes with a mass of ~25 solar masses and radius ~36.7 km”, “World Torus and Big Egg before the expansion of the Universe”, “NBHs orbiting the World Torus”, “non-baryon dark matter” or “elementary black holes”, and many other new important ideas were postulated already in May 1997 [2]. The last version of the SST cosmology we can find in [3] and other papers.

According to the SST cosmology [3], there was created the Protoworld and early Universe already before the expansion of the Universe. Protoworld was a torus with central condensate both built of the dark matter (DM) particles. A quasar looks as a miniature of the Protoworld. Inside the torus appeared the early Universe – it was built of two loops composed of protogalaxies. Protogalaxies were the associations of NBHs. Almost all baryon matter was in the form of NBHs.

Now we can answer the following question: Why most of the baryon matter in NBHs appeared outside the Schwarzschild surfaces of the protogalaxies in the form of hot plasma?

When we truncate the sum of wavelengths for an oscillator such as, for example, electromagnetic waves at the Planck length then the zero-point energy density is some 120 powers of ten higher than the measured energy density of the dark energy. The mainstream physics cannot answer the following question: What cancels to one part in 120 powers of ten the zero-point energy concerning the virtual particles in a “vacuum”?

According to SST, the tremendous *non-gravitating energy* of the zero-point energy is frozen inside neutrinos [4]. Neutrinos consist of the superluminal binary systems of closed strings (entanglons) which are responsible for the quantum entanglement. The non-gravitating energy frozen inside each neutrino is about 119 powers of ten higher than its gravitational mass. Particles, dark matter and dark energy (DE) consist of the neutrino-antineutrino pairs which can be entangled [3], [4], [5].

Creation of a new neutrino caused that most of the entanglons exchanged between and inside the DM particles have been frozen inside the new neutrino. This phenomenon caused the DM particles to disintegrate into the DM loops which began to move towards the early Universe, causing violent collisions between dark matter and NBHs and between NBHs.

In such violent collisions of NBHs, the number density of the beta decays of neutrons was very high, and the low inertia of electrons compared to protons (electrons escaped from the plasma composed of protons) caused the electrical repulsion of protons to overcome the gravity of NBHs. Such phenomena started the expansion of the early Universe.

Additional increase in the dynamic pressure in the hot plasma was because of the thermonuclear reactions in the layer which separated the neutrons and protons – initially, by mass, there was 50% of ionized hydrogen and 50% of ionized helium-4 [3].

According to SST, the Universe is ~21.6 Gyr old (we count the time from the beginning of the expansion of the Universe) but we can see only the last period ~13.8 Gyr of evolution of galaxies so LIGO and Virgo cannot see the initial collisions of NBHs but we can observe the effects of such collisions, e.g. too much gold.

When the densification of baryon matter increases, the number density of the created virtual pairs of particles also increases, so their annihilations and divergent motions lower the zero-point energy. Thus, the reverse process, i.e. the initial expansion of the early Universe described here, caused an inflow of dark energy, so the density and dynamic pressure of spacetime increased – such inflow forced the galaxies to continue moving away from each other, but also to increase the size of the galaxies.

Emphasize that an inflow of dark energy increases the zero-point energy. Such changes in the zero-point energy were significant in relation to the baryonic mass density and DM density but infinitesimal in relation to the density of the two-component spacetime (the Higgs field plus Einstein spacetime) so the Universe is flat [3].

References

[1] Chiaki Kobayashi, *et al.* (15 September 2020). “The Origin of Elements from Carbon to Uranium”
The Astrophysical Journal, Volume 900, Number 2
arXiv:2008.04660 [astro-ph] (11 August 2020)

[2] Sylwester Kornowski (May 1997). “General Theory of Singularities”
http://katalogi.bn.org.pl/
National Library Book Storeroom, ID: ISBN: 8390100517, OCLC: (OCoLC)750519930

[3] Sylwester Kornowski (14 February 2019). “Foundations of the Scale-Symmetric Physics (Main Article No 2: Cosmology)”
http://vixra.org/abs/1511.0223

[4] Sylwester Kornowski (25 September 2020). “Foundations of the Scale-Symmetric Physics (Main Article No 1: Particle Physics)”
http://vixra.org/abs/1511.0188
[5] Sylwester Kornowski (2 May 2020). “Dynamics at the Surface of Spacetime at the End of Inflation”
http://vixra.org/abs/2005.0034