The Correct Age of the Universe

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Abstract: Ludwig et al. derived solar ages from 1.7 to 22.3 Gyr (2009). The applied Th/Eu ratio is most credible. But the upper limit of the obtained interval is inconsistent with the mainstream-cosmology age of the Universe, about 13.8 Gyr. The upper limit is very close to the age of the Universe obtained within the Scale-Symmetric Theory (SST), about 21.614 +- 0.096 Gyr. G. Hasinger et al. (2002) obtained that the Fe/O abundance in a high-redshift quasar is significantly higher than solar (Fe/O = 2 - 5). This result as well is inconsistent with mainstream cosmology and suggests that age of the Universe is longer than assumed or that there is an unknown mechanism for production of iron in the very early Universe. The incorrect age of the expanding Universe follows from the fact that the front of the CMB has radial speed equal to the speed of light, c, whereas the front of the baryonic matter, dark matter and dark energy (the dark matter of the Universe is entangled with the baryonic matter) has radial speed equal to 0.6415c i.e. the most distant galaxies are already 7.75 Gyr old. The calculated within SST time distance to most distant galaxies is 13.866 +- 0.096 Gyr. Due to the cascade protuberances of the dark matter at the beginning of the expansion of the Universe, there appeared protogalaxies with redshift higher than z = 1 but such protuberances were very quickly dampened. Due to the last-scattering spheres, we can see spectrums of "superluminal" galaxies. In reality, the era of quasars lasted about 10 Gyr but we can see only the end of this era i.e. the last 2.5 Gyr.

Here [1] we can find a recapitulation concerning the ages of stars. There are cited the results obtained by Ludwig *et al*. (2009) [2] (see References: [91]). Ludwig *et al.* derived solar ages from 1.7 to 22.3 Gyr. The applied Th/Eu ratio is most credible. But the upper limit of the obtained interval is inconsistent with the age of the Universe, about 13.8 Gyr, calculated within the mainstream cosmology. The upper limit is very close to the age of the Universe obtained within the Scale-Symmetric Theory (SST), about 21.614 ± 0.096 Gyr [3B].

G. Hasinger *et al*. (2002), on base of the XMM-Newton data, discovered that the Fe/O abundance in the $z = 3.91$ (high-redshift) broad absorption line (BAL) quasar APM 08279+5255, is significantly higher than solar (Fe/O = $2 - 5$) [4]. This result as well is inconsistent with mainstream cosmology and suggests that age of the Universe is longer than assumed or that there is an unknown mechanism for production of iron in the very early Universe.

The big mistake in the mainstream cosmology follows from the wrong interpretation of the Michelson-Morley experiment [1B], [5]. In reality, due to the quantum entanglement, the speed of light c is the speed of photons in relation to the source or in relation to the last-interaction object. Detectors are always the last-interaction objects so measured speed of photons is the c always. But it is untrue that a photon has simultaneously the speed c in relation to all reference systems.

The General Relativity leads to the non-gravitating Higgs field composed of tachyons [3A]. On the other hand, the Scale-Symmetric Theory (SST) shows that the succeeding phase transitions of such Higgs field lead to the different scales of sizes/energies [3A]. Due to the saturation of interactions via the Higgs field and due to the law of conservation of the half-integral spin that is obligatory for all scales, there consequently appear the superluminal binary systems of closed strings (entanglons) responsible for the quantum entanglement (it is the quantum-entanglement scale), stable neutrinos and luminal neutrino-antineutrino pairs which are the components of the luminal Einstein spacetime (it is the Planck scale), cores of baryons (it is the electric-charges scale), and the cosmic structures (protoworlds; it is the cosmological scale) that evolution leads to the dark matter, dark energy and expanding universes (the "soft" big bangs) [3A], [3B]. The non-gravitating tachyons have infinitesimal spin so all listed structures have internal helicity (helicities) which distinguishes particles from their antiparticles [3A].

In mainstream cosmology is incorrectly assumed that the beginning of inflation was not separated in time from the beginning of expansion of the Universe. In reality, some cosmic structure (the Protoworld) appeared after the inflation. Evolution of the Protoworld and the correct interpretation of the Michelson-Morley experiment lead to the correct age of the Universe – it is 21.614 ± 0.096 Gyr but SST shows that time distance to most distant visible galaxies is 13.866 ± 0.096 Gyr [3B], [6]. Evolution of the Protoworld leads to the correct abundances of baryonic matter, dark matter and dark energy and to the measured temperature of the CMB [3B].

SST shows that a fundamental theory should start from infinite nothingness and pieces of space [3A]. Sizes of pieces of space depend on their velocities [3A]. The inflation field started as the liquid-like field composed of non-gravitating pieces of space [3A]. Cosmoses composed of universes are created because of collisions of big pieces of space [3A], [3B]. During the inflation, the liquid-like inflation field (the non-gravitating superluminal Higgs field) transformed partially into the luminal Einstein spacetime (the big bang) [3A], [3B]. In our Cosmos, the two-component spacetime is surrounded by timeless wall – it causes that the fundamental constants are invariant [3A], [3B], [7].

Due to a fluctuation in the Einstein spacetime, there appeared the cosmic-structure/Protoworld that created the double cosmic loop composed of protogalaxies (the double loop was the very early Universe before its expansion). The Protoworld was built of nucleons [3B]. The phase transition of the core of the Protoworld caused the exit of the very early Universe from the black-hole state [3B]. The core of Protoworld transformed into the dark matter i.e. into the additional Einstein-spacetime components (instead the short-distance entanglement there appeared the long-distance entanglement) entangled with the visible matter [3B]. Due to the inflows of the dark matter and dark energy into the very early Universe, the dynamic pressure inside it increased – it caused the exit of the very early Universe from the black-hole state i.e. the double cosmic loop started to expand. Dynamics of such expansion shows that mean radial speed of the front of baryonic matter, dark matter and dark energy was and is 0.6415 times lower than the maximum radial speed of the CMB that is equal to the speed of light in "vacuum" c (this speed is characteristic for the Einstein-spacetime components).

At the assumptions that the Milky Way is close to the centre of the expanding Universe, that at the beginning of the expansion of the Universe there were only neutrons and that the CMB was created when 50% of neutrons transformed into free protons and 50% of neutrons transformed into helium, we obtain the measured temperature of CMB consistent with observational facts and we obtain that the radius of the sphere filled with CMB photons is equal to 21.614 ± 0.096 Gyr, [3B], – it is the correct age of the Universe. The radial speed of the front of the expanding baryonic matter, dark matter and dark energy is $0.6415c$ [3B]. It leads to conclusion that the most distant galaxies are today in distance 13.866 ± 0.096 Gyr [3B]. We obtain that we cannot see the initial period 7.75 Gyr of evolution of the quasars [3B]. In reality, the era of quasars lasted about 10 Gyr but we can see only the end of this era i.e. the last about 2.5 Gyr. We can see that there was time to produce the surplus iron. The quasars transformed into the massive galaxies whereas in explosions of the quasars were produced the satellite/dwarf galaxies – generally, it happened during the unseen 7.75 Gyr. Due to the duality of relativity, which follows from the quantum entanglement, there is discrepancy between the time distance and spatial distance to an object. The spatial distance to the observed most distant objects is 4.97 Gyr only [6].

The protogalaxies were the flat-structures/discs composed of neutron black holes. At the beginning, in the double cosmic loop there were $N = 2 \cdot 2 \cdot 4^{16} \approx 1.718 \cdot 10^{10}$ protogalaxies [3B]. Generally, the binary systems of protogalaxies transformed into spiral galaxies whereas due to the mergers, there appeared the barred galaxies and elliptical galaxies [8]. The initial explosions of groups of protogalaxies created the satellite/dwarf galaxies – most of them appeared already during the unseen period 7.75 Gyr.

References

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