The Correct Age of the Universe

Sylwester Kornowski

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 (S-ST), 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 S-ST shows that both conclusions are correct. 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 part 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 S-ST 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 damped. Due to the last-scattering spheres, we can see spectrums of not numerous “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 (S-ST), about 21.614 ± 0.096 Gyr [3].

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 S-ST, [3] and [5], shows that both conclusions are correct.

The big mistake in the mainstream cosmology follows from the wrong interpretation of the Michelson-Morley experiment [6]. 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 S-ST shows [3] that the beginning of the inflation and the beginning of expansion of the Universe were separated in time. The physical constants need not expanding spacetime. There expands the baryonic matter, dark matter, dark energy and CMB but their resultant mass density is about 10^{55} times lower than the mass density of the non-expanding spacetime. Just at the end of the inflation there appeared the stable boundary of the spacetime [7].

The third wrong assumption in mainstream cosmology is that there was not in existence a stable cosmic structure which transformed into the expanding Universe. Evolution of such structure (the Protoworld) leads to the correct abundances of baryonic matter, dark matter and dark energy and to the measured temperature of the CMB [3]. Due to a fluctuation in the Einstein spacetime, there appeared the cosmic-structure/Protoworld which created the double cosmic loop composed of protogalaxies (the double loop was the very early Universe before its expansion). The Protoworld was built of entangled and/or confined Einstein-spacetime components (there was the short-distance entanglement). At some moment, due to some phase transition described here [3], there appeared new neutrino which captured the entanglons responsible for the short-distance entanglement of the Einstein-spacetime components the core of the Protoworld consisted of. 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). Due to the inflows of the dark matter 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.

Due to the law of conservation of radial momentum and due to the long-distance quantum entanglement of the dark matter and dark energy with baryonic matter, the maximum radial speed of the three components is 0.6415 times lower than the maximum radial speed of the CMB [3] which is equal to the speed of light in “vacuum” i.e. in the Einstein spacetime.

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 there was 50% of free protons and 50% of nucleons in nuclei of helium, we obtain the measured temperature of CMB for radius of the sphere filled with CMB photons equal to 21.614 ± 0.096 Gyr, [3], – 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 [3]. It leads to conclusion that the most distant galaxies are today in distance 13.866 ± 0.096 Gyr [3]. We obtain that we cannot see the initial period 7.75 Gyr of evolution of the quasars. 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. 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 [8].

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 [3]. Generally, due to the mergers, 35% of the binary systems of protogalaxies (0.35N/2) transformed into quasars which next transformed into massive spiral galaxies and dwarf galaxies (due to the explosions of the quasars) [9]. The left 65% of binary systems transformed into groups each containing 8 binary systems (0.65N/16) [9]. Next, the groups transformed into quasars which next transformed into massive elliptical galaxies and dwarf

galaxies. We can calculate that in the Universe there should be about $0.37 \cdot 10^{10}$ massive galaxies and much more satellite/dwarf galaxies. On assumption that there are about 50 satellite/dwarf galaxies per one massive galaxy, we obtain that total number of galaxies is about two hundred billion galaxies.

References

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