New Observational Data Verify the Evolution of Massive Galaxies

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Abstract: New data based on observations obtained at the Very Large Telescope (VLT) of the European Southern Observatory (ESO), Paranal, Chile, lead to conclusion that baryons in the early Universe efficiently condensed at the centres of dark matter halos when dark matter was less concentrated. It means that we must solve following cosmological problem: Was there a sufficiently long period during the mainstream Big Bang for concentration of baryonic matter, partially separated from dark matter, to create the discs of massive galaxies in very early Universe? Here we showed that new data are consistent with the evolution of massive galaxies presented within the Scale-Symmetric Theory (SST). The main features are as follows. The expansion of the Universe was separated in time from the inflation. The return shock wave after the inflation created the cosmic structure which looked as very big quasar (the Protoworld). Inside the torus of the Protoworld were created massive protogalaxies with supermassive black holes in their centres. Due to a phase transition of the Protoworld, its torus and supermassive central black hole transformed into dark matter. Only then there were the inflows of dark matter and dark energy into the baryonic protogalaxies.

New data based on observations obtained at the Very Large Telescope (VLT) of the European Southern Observatory (ESO), Paranal, Chile, lead to conclusion that baryons in the early Universe efficiently condensed at the centres of dark matter halos when dark matter was less concentrated [1].

We must answer following question: Was there a sufficiently long period during the mainstream Big Bang for concentration of baryonic matter, partially separated from dark matter, to create the discs of massive galaxies in very early Universe?

Here we showed that new data are consistent with the evolution of massive galaxies presented within the Scale-Symmetric Theory (SST) [2], [3], [4].

SST shows that after the inflation, due to the return shock wave, there was created a cosmic structure which looked as a very big quasar (Protoworld) with left-handed internal helicity of its torus that distinguishes nucleons from antinucleons [2], [3]. Inside the cosmic torus of the Protoworld there was created the very early Universe composed of protogalaxies grouped in larger structures [3]. A phase transition of the Protoworld transformed its torus and the supermassive central black hole into the dark-matter (DM) structures (they are built of the entangled non-rotating-spin Einstein-spacetime components) [3]. Such phase transition caused

as well that there appeared the dark energy (it consists of the additional non-rotating-spin Einstein-spacetime components interacting gravitationally only i.e. they are not entangled) that forced the expansion of the Universe (the “soft” big bang) [3].

We can see that there are following main features of the SST cosmology that are consistent with the recent observational data:

1) The expansion of the Universe was separated in time from the inflation.

2) The return shock wave after the inflation created the cosmic structure which looked as very big quasar (the Protoworld).

3) Inside the torus of the Protoworld were created massive protogalaxies with supermassive black holes in their centres.

4) Due to a phase transition of the Protoworld, its torus and supermassive central black hole transformed into dark matter.

5) Only then there were the inflows of dark matter and dark energy into the baryonic protogalaxies.

References

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