Quantum Density of the Universe

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Quantum density of the universe is one of the basic parameters that describe its condition. Our universe is heterogeneous and curved (it is not flat). Quantum density is the concentration of quantons in a unit volume of quantized space-time. This parameter was first introduced by me in the theory of Superunification [1]. Quantum theory now allows us to mathematically describe a quantized universe as a function of the distribution of the quantum density of a medium.

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The calculated diameter of the quanton was first obtained in the theory of Superunification [1, 2, 3]:

$$L_{qo} = \left(\frac{4}{3} k_3 \frac{G}{\varepsilon_o} \right)^{\frac{1}{4}} \frac{\sqrt{eR_s}}{C_o} = 0,74 \cdot 10^{-25}\,\text{m} \qquad (1)$$

The formula (1) includes known constants [1, 2]. The dimensions of the quanton are determined by the linear length of the order of 10^{-25} m. It may be accepted that the length of 10^{-25} m is the fundamental length for our universe, determining the discreteness of the quantized space-time. This does not mean that in nature there are no dimensions smaller than the fundamental length. In comparison with the fundamental length of 10^{-25} m which determines the quanton dimensions, electrical and magnetic charges, including the structure of the monopoles, can be regarded as point formations with the size of the order of Planck length of 10^{-35} m. The actual displacements of the charges inside the quanton are considerably smaller than the Planck length [1].

From (1) we determine the quantum density ρ_o of the non-deformed quantized space-time [1, 2]:

$$\rho_o = \frac{k_3}{L_{qo}^3} = \frac{1,44}{L_{qo}^3} = 3,55 \cdot 10^{75}\,\frac{q}{m^3} \qquad (2)$$

Formula (2) shows that the quantum density of the medium has a colossal value of $\sim 10^{75}$ q/m^3. It also shows that a quanton is the most common particle in the universe together with electric and magnetic quarks in the structure of a quanton.

References:
[1] V. S. Leonov. Quantum Energetics. Volume 1. Theory of Superunification. Cambridge International Science Publishing, 2010, 745 pgs.
[2] Vladimir Leonov. The Calculated Diameter of the Space-Time Quantum (Quanton). **viXra:1910.0402** *submitted on 2019-10-21 09.*
[3] Download free. Leonov V. S. Quantum Energetics. Volume 1. Theory of Superunification, 2010. http://leonov-leonovstheories.blogspot.com/2018/04/download-free-leonov-v-s-quantum.html [Date accessed April 30, 2018].