The most condensed material in the Universe; 10^{25} times of a black hole (Cidtonium)

Gh. Saleh

Saleh Research Centre, Netherlands

If we want to get the constituent of the Big Bang, we can suggest the photon as the option which based on Saleh Theory is particle. Accordingly the volume and density of the Big Bang will be:

$$m_T = 10^{53} \ kg$$

$$m_p = 1.67 \times 10^{-35} \ kg$$

$$r_p = 1.2 \times 10^{-17} \ m$$

$$n = \frac{m_T}{m_p} = \frac{10^{53}}{1.67 \times 10^{-35}} \Rightarrow n = 6 \times 10^{87}$$

$$V_p = \frac{4}{3}\pi {r_p}^3 = \frac{4}{3}\pi(1.2 \times 10^{-17})^3 \Rightarrow V_p = 7.23 \times 10^{-51} \ m^3$$

$$\rho_p = \frac{m_p}{V_p} = \frac{1.67 \times 10^{-35}}{7.23 \times 10^{-51}} \Rightarrow \rho_p = 2.31 \times 10^{15} \ {kg}/{m^3}$$

$$V_{BB} = nV_p = 6 \times 10^{87} \times 7.23 \times 10^{-51} \Rightarrow V_{BB} = 4.33 \times 10^{37} m^3$$

$$V_{BB} = \frac{4}{3}\pi {r_{BB}}^3 \Rightarrow {r_{BB}}^3 = \frac{4.33 \times 10^{37}}{\frac{4}{3}\pi} \Rightarrow r_{BB} = 2.18 \times 10^{12} m$$

$$\rho_{BB} = \frac{m_T}{V_{BB}} = \frac{10^{53}}{4.33 \times 10^{37}} \Rightarrow \rho_{BB} = 2.31 \times 10^{15} \ {kg}/{m^3}$$

Where m_T is the total mass of universe, n is the number of photon, m_p, r_p, V_p *and* ρ_p are the mass, radius, volume and density of the photon and r_{BB}, V_{BB} *and* ρ_{BB} are the radius, volume and density of the Big Bang sphere.

Considering that the density of the Big Bang obtained by using photons is about $10^{15} \ {kg}/{m^3}$ and as instant, the radius of the Big Bang sphere will be from the Earth to Jupiter. So, it could not be a suitable choice for the Big Bang, because it does not meet the definition that we expect for the Big Bang. In order to achieve our desired goal, we define a particle whose radius is one billionth of a photon, “Cidtonium”. According to this new particle we have:

$$r_C = r_p \times 10^{-9} = 1.2 \times 10^{-26} \ m$$

$$V_C = \frac{4}{3}\pi {r_C}^3 = \frac{4}{3}\pi(1.2 \times 10^{-26})^3 \Rightarrow V_C = 7.23 \times 10^{-78} \ m^3$$

$$\rho_C = \frac{1.67 \times 10^{-35}}{7.23 \times 10^{-78}} \Rightarrow \rho_C = 2.31 \times 10^{42} \ {kg}/{m^3}$$

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postmaster@saleh-theory.com

$$V'_{BB} = nV_C = 6 \times 10^{87} \times 7.23 \times 10^{-78} \Rightarrow V'_{BB} = 4.33 \times 10^{10} m^3$$

$$V'_{BB} = \frac{4}{3}\pi {r'_{BB}}^3 \Rightarrow {r'_{BB}}^3 = \frac{4.33 \times 10^{10}}{\frac{4}{3}\pi} \Rightarrow r'_{BB} = 2.18 \times 10^3 m$$

$$\rho'_{BB} = \frac{m_T}{V'_{BB}} = \frac{10^{53}}{4.33 \times 10^{10}} \Rightarrow \rho'_{BB} = 2.31 \times 10^{42} \, {kg}/{m^3}$$

Where n is the number of Cidtonium, m_C, r_C, V_C and ρ_C are the mass, radius, volume and density of the Cidtonium and r'_{BB}, V'_{BB} and ρ'_{BB} are the radius, volume and density of the Big Bang sphere based on Cidtonium.

It is clear that the size of the Big Bang sphere based on Cidtonium is about the moon and the density is about $10^{42} \, {kg}/{m^3}$. Therefore, this particle could be a suitable choice for the nature of the Big Bang.

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