Universe Density

Hamid Bassera[1], Freelance.

Rabat, Morocco

17 October 2013

Abstract

In this work I deduced Hubel law as consequence of universe considered as black hole. Also I give here another way letting you to ditch the so alleged black hole being a singularity.

Nothing can escape from the universe even the light, because beyond the actual universe's boundary there is no universe, no place where to go. Thus at first sight the universe must have a size less than its black hole radius R_b!

But beyond universe size there non space at all therefore at any time R_b must equal its size, so

$R = R_b = \frac{2GM_u}{c^2} = \frac{8\pi G\rho}{3c^2}R^3$ where R is universe's present radius and M_u its mass

At present time $R = ct$ with t corresponding to universe age, so

$8\pi G\rho t^2 = 3$

This is simply Hubble law $\rho = \frac{3H_0^2}{8\pi G}$ where $H_0 = \frac{1}{t}$

$t = 13.8\ 10^9\ years \quad \Rightarrow \quad \frac{3}{8\pi Gt^2} \cong 5.641\ \ ptotons/m^3$

To be compared to the measured density of the universe $\overline{\rho_u^{exp}} = 6.0 \mp 0.5\ \ protons/m^3$

[1] bh4ha@yahoo.fr