The Equilibrium Density of the Universe in a Rotating Universe

1.0 Abstract

The Big Bang theory basically states that the universe is expanding and that there is point that there could be a critical density at which the universe could go on expanding forever or crunch. The theory of a rotating universe can also have a red shift, but the equations are different and the critical density is different for rotating universe. In fact, the particular rotating universe that this theory deals with is that our universe may be in equilibrium with neither contraction or expansion. In this paper we calculate what this equilibrium density is 4.819561 * 10^-23 Kg/m^3. This is a much higher density then the current estimates of 1-3*10^-26 Kg/m^3 and would greatly affect the rotation curves of galaxies. Perhaps explaining part of the rotation curves.

2.0 Discussion

The current model of the universe assumes that the universe is expanding. This makes sense to make this assumption due to the red shift of light being more, red-shifted, the farther a light source is from the earth. There are a number of equations that govern how the red shift is calculated.

Gravitational Redshift $$[Z+1]^2 = \frac{gttreceiver}{gttsource} \quad [1]$$

Transverse Redshift $$[Z+1]^2 = \frac{1}{1-(v/c)^2} \quad [2]$$

Radial Redshift $$[Z+1]^2 = \frac{1+\frac{v}{c}}{1-\frac{v}{c}} \quad [3]$$

In Big Bang theory it is assumed that the Redshift is mostly Radial Redshift as shown in Equation 3. Using current technology, it is impossible to measure if the motion is actually Transverse, that is moving perpendicular to our view, or Radially, that is moving away from our view.

This paper will calculate a critical density assuming a mostly transverse motion due to a rotating sphere on 3 axes. This will be in keeping with Granular Spacetime as described in Sphere Theory's "Evidence for Granular Spacetime" [1] In Granular Spacetime is was found that the spheres of the construction of the universe can be modelled as spheres spinning on 3 perpendicular axes.

3.0 Calculations

$KineticEnergy = E_k = \frac{1}{2} I\omega^2$ where [4]

$$\omega = \frac{v}{r} \quad [5]$$

$$I = \frac{2}{3} mr^2 \quad [6]$$

In sphere theory the original state of the universe was that discontinuities were created by packing spheres around spheres. The concentration of discontinuities, which are proposed to cause mass are more concentrated at the center of the universe. Due to mass appearing to be even distributed throughout the universe it is proposed, in the original state, the kinetic energy in equations 7 and 8 should be ½ of their calculated value. The final value is shown in equation 8.1.

Combining

$$E_k = \frac{1}{2} \frac{2}{3} \frac{v^2}{r^2} mr^2 \quad [7]$$

Which simplifies to

$$E_k = \frac{mv^2}{3} \quad [8]$$

$$E_k = \frac{mv^2}{6} \quad [8.1]$$

where $v = \pi c$ [9]

we must set the kinetic energy equal to the potential energy

Potential Energy= $\frac{\rho G 4\pi r^2 m}{3}$ [10]

When calculating the Potential Energy, 4π , is already built into G there for the Equation is actually

Potential Energy= $\frac{\rho G r^2 m}{3}$ [11]

Setting Equation 8 equal to Equation 11 yields

$$\frac{m(\pi c)^2}{3} = \frac{\rho G r^2 m}{3} \quad [12]$$

Solving for equilibrium density ρ

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$$\rho = \frac{(\pi c)^2}{Gr^2} \quad [13]$$

Equation 13 is an approximation of the equilibrium density. The universe is much smaller than expected, but appears infinite as the curvature curves to a spherical radius. Due to this curvature and the dark energy coming from a rotating universe, the equilibrium density is much higher than a Critical Density of about $9.48*10^{-27}\frac{kg}{m^3}$ of the Hubble Sphere Universe, where the normalized spatial curvature is zero and the cosmological constant is zero. The spinning sphere universe has a critical density of

The calculations result in a universe of 3.01832* billion light years this solves to an equilibrium density of $4.819561*10^{-23}\frac{kg}{m^3}$

The final equation for the equilibrium density of the universe is

Equilibrium Density $= \rho_e = \frac{8*E*M_n^7*c^2}{12^{0.5}M_p^2\pi^{1.5}h^4*27} = 4.819561*10^{-23}\frac{kg}{m^3}$

Where

$$E = (\pi^2 + \pi^2 + 1^2)^{0.5} = 4.554032147688 =$$

$M_p = Massofproton$

$M_n = Massofneutron$

$h = Planckconstant$

$c = speedoflight$

4. Discussion

This equilibrium density is much higher than the critical density. More work is being done on determining the equilibrium density of the universe. This much higher density, on the order of a thousand times higher, would certainly affect galactic motions.

5 References

1. http://vixra.org/pdf/1601.0234v6.pdf