Gravity Seen as Expansion

A Letter to the Editor

by Nick Markov, PhD

The purpose of this letter is to present evidence supporting a hypothesis, which states that gravity and the universal expansion are two manifestations of the same phenomenon: We perceive expansion when we are a part of (or inside) the attracting mass, and we observe the external boundaries of the mass expanding; We perceive gravity when we are not a part of, or we are external to, the "attracting" mass. In other words, the claim is that every mass expands with rates proportional to its density, which makes us, and our surroundings, a part of the universal expansion.

The evidence has always been before our eyes, but we are so used to it, that we failed to see it: The blue skies at noon and the red skies at sunset (blue shift and red shift), or the Doppler changes in the solar spectrum throughout the day: *"…I may repeat my conviction, already stated in my paper dated 25th April, 1870, that besides other changes in the light, as the sun approaches the horizon, there is this peculiarity, that rays of less refrangibility become visible, so that the spectrum appears to be extended towards the red end."*[1]

The benefits: the higher speeds of the stars in the galaxies can be explained by the expansion of the galactic mass, i.e. no "dark matter" needed; no "dark energy" needed to explain the accelerating expansion, for this represents the gravitational acceleration of the Universe observed from the inside of the universal mass; also no "Big Bang" needed because all matter shrinks back in time with the rest of the Universe.

How do we join gravity and expansion mathematically?

$$\ddot{r} = k\frac{M}{r^2} = k_1\rho\frac{r_0^3}{r^2} = k_1\rho\frac{r_0^3}{r^3}r = k_1\overline{\rho}r \qquad (1)$$

where $\overline{\rho}$ is the density of a space sphere with radius r containing a mass with radius r_0. After one integration, we can write for H (Hubble's constant):

$$H = \sqrt{k_1\overline{\rho}} \qquad (2)$$

where, in this case, $\overline{\rho}$ is the average density of a huge space sphere with radius r.

Note: The expansion is density dependant, but the relative dimensions of the objects almost don't change because true expansion speed cannot be gained from the acceleration (1) - every new moment restarts the expansion with decreasing absolute density. The changes are only evident when an object is within the perimeter of another expanding object, and the dimension changes manifest as attraction.

References

[1]On the Atmospheric Lines of the Solar Spectrum, Illustrated by a Map Drawn on the Same Scale as That Adopted by Kirchhoff, by J. B. N. Hennessey, *Philosophical Transactions of the Royal Society of London*, Vol. 165, 1875 (1875), pp. 157-160