DERIVE UNIVERSAL Ho

M. D. Earl 2023

The value of universal Ho in the XPXP model is: $\frac{\sqrt{G_E \rho_0}}{3}$

This expression for Hubble's constant has been determined upon consideration beginning with the H/L law, and thereafter generating exponential expressions as below. Keeping assumptions to a minimum, the universal constant thus far has worked perfectly.

The XPXP derivation for Ho differs from the methods established in the λCDM model. It is submitted that these derivations are incorrect due to inertial math. The expansion of the universe is a free exponential expansion, with a constant density.

Assuming Ho constant, beginning with the Hubble/LeMaitre law:

$$R = R_0 e^{H_0 t} \qquad V = 4/3\pi R_0^3 e^{3H_0 t}$$

The velocity of this XPXP volume is: $v_V = dV/dt = 3H_0 V_0 e^{3H_0 t}$

And the acceleration of the volume is: $A_V = dv_V/dt = 9H_0^2 V_0 e^{3H_0 t}$

We have seen that GEMo in an non-accelerated expansion produces Newton's gravitational Laws. Therefore, we assume: $A_V = G_E M_0 e^{3H_0 t}$

Equating both expressions for Av:

$$A_V = G_E M_0 e^{3H_0 t} \qquad = 9H_0^2 V_0 e^{3H_0 t}$$

$$H_0^2 = G_E M_0 / 9V_0 \qquad and\ H_0 = \frac{\sqrt{G_E \rho_0}}{3}$$

Recognizing the importance of Ho in describing the universal expansion suggested that the same process might produce other expansions, such as in gravity and galaxies. By determining the relationship between the exponential expansion of matter and the exponential expansion of space, a non-constant "coefficient of exponential expansion", H, may be determined to describe the character of a particular expansion.