

## Conclusion

The Universal Exponential Decay not only works better than the Hubble theory, it is also much more well validated by other phenomena than is the Hubble theory.

### WHY THE HUBBLE THEORY MUST BE ABANDONED

The Hubble theory problems include whether its constant,  $H_0$ , is truly a constant at all, which goes beyond the existing problem of finding a value for it. Other problems are the asymptotic nature of the function, which severely distorts the interpreted age of the Universe, and that the underlying assumptions are unreliable. The Hubble theory requires accepting that early stars and galaxies formed at an extremely short time [cosmically speaking] after the Big Bang.

The biggest problem stems from that at the time the theory was developed values for  $z$  greater than  $1.0$  were inconceivable. Consequently the problem of the theory calling for recession velocities exceeding the speed of light did not arise until later upon the observing of just such values for  $z$ . By then the theory had been so well accepted and embedded in the practice of astronomy that the thought of abandoning it with no alternative on the horizon could not be seriously entertained.

The result was the resorting to the concept that it was expansion of space itself that was violating the speed limit set by light, and that space was doing that “legally”. However, whether by “physical” motion or by being carried along by expansion of space the Hubble theory calls for actual separation distances from us to be increasing at a rate that is impossible.

### WHY THE UNIVERSAL DECAY THEORY MUST BE ADOPTED

The Universal Decay analysis of redshifts has none of the problems of the Hubble theory: its only constants are the well established speed of light,  $c$ , and the natural logarithmic base,  $e$ ; its age of the Universe and time for the earliest stars and galaxies to form are reasonable; it relies on no unreliable assumptions and it calls for full respect for the speed limit of light speed. It readily accommodates the earliest stars and galaxies not forming earlier than *2-3 billion years* after the Big Bang.

[The Doppler Effect still causes a minor part of redshifts because the recession velocities must have that effect; however, those shifts are always due to recession velocities less than the speed of light and the dominant part of redshifts is that due to the Universal Exponential Decay].

The Universal Decay is supported by the combined evidence of four anomalies none of which has a satisfactory resolution other than the Universal Decay: the Rotation Curves anomaly, the Pioneer anomaly, the Flyby anomaly, and the Dark Flow anomaly.

The Universal Decay provides a perfect cosmic “yardstick” for all distances to all cosmic objects, near and far, in that any objects’ light observed here now carries the information as to its place on the exponential decay curve, the time it was emitted, in its specific speed and wavelength shift.

FOR WHAT THIS MEANS

FOR THE “SHAPE” OF TODAY’S COSMOS

SEE THE FOLLOWING SECTION 14 -

*The Cosmos’ Expansion From The Origin To The Present*