

OVERVIEW OF THE PROPER COSMIC EXPANSION :

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“EXPONENTIAL” IN THIS MODEL IS NOT SYNONYMOUS WITH “EXTREME” ($H_0 \ll 1$). It is not the inflation of the standard model.

The XPXP theory proposes that the matter of the universe induces an exponential expansion of all space and matter. The fundamental premise of the theory is based upon the observations of Hubble regarding the movement of the galaxies.

The Hubble/Lemaitre Law (H/L) describes a universe that is expanding exponentially. The exponential nature of velocities, accelerations and distances are barely noticeable on the local level, since the universal exponential expansion is governed by Hubble's constant (H_0), which has an infinitesimally small value ($\sim 10^{-18}$ /sec). Accordingly, the expansion is significant only for very large distances and speeds... in a manner analogous to the detectability of “relativistic” effects of the standard model. As a check for the validity of this expansion theory, exponential expressions should correspond to common “non-relativistic” expressions, just as Einstein's relativistic expressions do. This is because $e^{H_0 t}$ approximates $e^0 \sim 1$, unless t is significantly large.

The XPXP theory claims:

- The galaxies and the space between expand exponentially. (The “proper” expansion)
- A proper observer simultaneously exponentially expands with the universe.
- Few galaxies do not obey the H/L relationship, and are described as “peculiar”...they move with respect to the proper frame.
- All expansion properties are instantaneous, a short time span represents an instantaneous exponential value because $e^0 = \text{approximately } 1$.
- The expansion is time-dependent, the XPXP light-time distance is a true measure
- Light expands exponentially with respect to the proper universal expansion, causing a proper observer to measure light speed as a constant.

A knowledge of some exponential mathematics is necessary to see why the XPXP model describes the universe more accurately than the present λ CDM model.

It is proposed that the present standard cosmological model (λ CDM) provides only approximations of the true workings of the universe. This is why most scientists believe that only small adjustments to the present theory are necessary to explain inconsistencies. But 95% of the matter and energy (D.M. and D.E.) of the universe is missing! A more reliable model is necessary.

Probably the most attractive aspect of the XPXP theory is that it is all-encompass-

ing. An understanding of the exponential principles of the cosmic flow leads to math principles which apply to other phenomena such as gravitation, redshift, universal acceleration etc. When understood, it is anticipated that XPXP will apply on all scales and becomes an excellent candidate for the “theory of everything”.

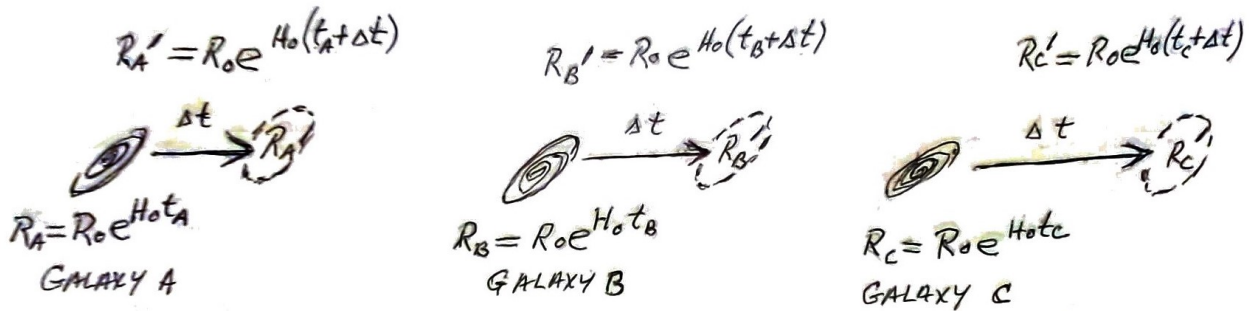
The expansion field of the cosmos is described in the Hubble/LeMaitre (H/L) law. One property of this expansion is that the universal density is constant, because the general equation describes a concurrent increase of universal matter and volume. The value of universal H_0 (see derivation) is density dependent, and therefore is also constant. The XPXP theory presented herein proposes that the λ CDM logic which requires that H_0 has changed in the past, is faulty. That logic was created to provide agreement with λ CDM model and to suggest a “big bang”.

The radial movement of “proper” galaxies in the cosmic expansion is illustrated in Figure 20-1. Because the expansion occurs in all directions, and is exponential, it is somewhat difficult for earth-bound humans to imagine its ever-increasing effects. As a proper galaxy of the flow moves, so do all other universal components and the space between. All have their own instantaneous expansion position, velocity, and acceleration. A simplification of these motions assigns an arbitrary expansion direction, realizing that any direction is expanding during the volumetric expansion. Relative motions of the cosmic components may then be mathematically analyzed. There is no “special” direction, which is consistent with the cosmological principle. A familiar cosmic analogy to the expansion is the baking of raisin bread, in which all of the raisins expand away from each other...but in this model they are exponentially expanding.

GENERAL ILLUSTRATION OF PROPER EXPONENTIAL EXPANSION:

To begin a simplified exploration of the xpxp galactic flow, terms like scale factors, comovement, relativistic, etc. must be abandoned. These terms may be reconsidered once the exponential expansion is understood.

Figure 20-1. Proper Galactic Motion:



DURING A TIME INTERVAL Δt , THESE PROPER GALAXIES RECEDE FROM AN OBSERVER LOCATED AT R_A . MORE DISTANT GALAXIES MOVE FASTER AND FARTHER, ACCORDING TO THE HUBBLE/LEMAITRE LAW. IT WILL BE SHOWN THAT THE INITIAL LIGHT-TIME SEPARATIONS OF THESE GALAXIES (THE LIGHT-TIME INTERVALS) AMAZINGLY DO NOT CHANGE!

Some properties of the expansion:

- Time is absolute, no new rule like “dilation”
- “Proper” galaxies exponentially recede from an also exponentially expanding observer at R_A .
- All galaxies exponentially increase in position, velocity and acceleration
- The space between the galaxies also expands exponentially.
- An observer’s position simultaneously exponentially expands with the universe.
- The few galaxies which do not obey the H/L relationship are defined as “peculiar”
- All expansion properties are instantaneous.
- The expansion is time-dependent, and the light-time distance is a true measure of the increasing separation of the galaxies
- Proper galaxies move at exponentially expanding “light speed” relative to a stationary universe, while light moves at exponentially expanding “light speed” relative to the proper expansion.

The universal expansion field is a function of the density of the entire universe. But a spatially expanding acceleration field is induced by any matter, on any scale. It is presented that the H/L law also applies to the expansion of concentrated matter, producing what we know as “gravitation” (see “gravity”). This exponential expansion of concentrated matter differs from the free exponential expansion of the Universal Hubble Flow because of internal interaction of closely-spaced expanding matter. It is also proposed that quantum physics will prove to be an XPXP of matter and space on the quantum scale.