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Dark Energy: As A Fact of Matter RICHARD BOWEN, Patiently, LLC — At the current time Dark Energy has been attributed to a property of space itself, ie. the vacuum energy of space. This explanation does not account for the inflationary expansion of the early universe nor does it explain the flatness of the universe. If however, Dark Energy is considered to be a property of matter, these issues are resolved. The Space Production Model of Gravity proposes that matter is converted to and emits space. The amount of space emitted per unit time is proportionate to mass by the formula: $4\pi(2Gm/c^2)^2(c)$ Where: G = gravitational constant m = mass c = speed of light Using this formula and the observed Hubble constant one can calculate the mass of the universe to be $5.441\text{x}10^{53}$ kg. One can also calculate the size of the universe at a given age. $1.36\text{x}10^{20}$ cubic meters of new space is produced per planck time. Therefore one planck time after the Big Bang the radius of the universe was 3164 kilometers; after 1 second 88515 light years; and after 13.7 billion years 67 billion light years. The "Flatness" problem is also resolved. More massive gravitationally bound objects will produce more volume per unit time than less massive objects. This means that the rate of expansion of the universe is dependent upon the local mass density, the higher the density the greater the rate of expansion. Over time this produces a universe that is extremely homogenous. If the Space Production Model is true, the current Dark Energy survey should reveal that more massive gravitationally bound objects such as galaxy super-clusters recede slightly faster than much less massive lone galaxies at the same distance.

Richard Bowen
Patiently, LLC

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