Time, Dark Energy and the Black-hole White-hole Universe

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In this essay I propose an expanding black-hole universe (ours) with a contracting white-hole universe twin. Units of Planck momentum are transferred discretely from the white-hole to the black-hole thereby giving a rationale for the expansion of the universe, time, the arrow of time, dark energy and dark matter.

1 Introduction

Let us suppose that our universe is an expanding black hole with a contracting white hole twin. Units of Planck momentum are transferred in discrete 'drops' from the white hole universe. After each unit of Planck momentum, which equates to a single unit of Planck time, our universe expands by 1 unit of Planck mass and 1 unit of Planck volume.

When the white-hole universe has contracted completely and our universe therefore reached the limit of its expansion, the process reverses and we become the contracting white hole.

The velocity of this expansion is the velocity of light 'c', therefore, were we to travel faster than light, we could leave our universe.

As all events are driven by this expansion, time and so the arrow of time equate to the universe time-line. As this time-line is constant and 'c' is constant, there is no relativity.

As the expansion of the universe is forced by this constant addition of momentum, for our universe is not a closed system, dark energy is Planck momentum.

As our universe is a black hole and the fabric is Planck momentum, then dark matter is also Planck momentum.

We may therefore reduce our universe to the 3 dimensions of motion; momentum, velocity and time [1].

2 Universe mass density

We do not know either the mass or size of the universe, but we can estimate both its age (13.7billion years) and its mass density. Assuming 1 unit of Planck time equates to 1unit of Planck mass and 1 unit of Planck volume and that the age of the universe in units of Planck time = .8e61;

$$t_{univ} = 13.7e9 * 365.25 * 24 * 60 * 60 * c/l_p = .8e61$$

Mass of the universe $m_{univ} = t_{univ}.m_P$
Volume of the universe (sphere) $v_{univ} = 4.\pi.(2.l_p.t_{univ})^3/3$

$$\frac{m_{univ}}{v_{univ}} = \frac{3.m_P}{32.\pi.t_{univ}^2.l_p^3} = .239e-26 \tag{1}$$

our result (.239e-26kg/m3) corresponds with NASA's WMAP estimate for the density of dark matter (.23e-26kg/m3).

The Friedman equation, using 'p = mass density' (above);

$$\lambda = \frac{3.c^2}{8.\pi.G.p} = 4.c^2.t_{sec}^2 \tag{2}$$

$$\sqrt{\lambda} = r_{univ} \tag{3}$$

References

1. Macleod M.J. Planck Unit Theory: Fine Structure Constant Alpha and Sqrt of Planck Momentum http://vixra.org/abs/1308.0118