

339(3): The Vacuum Velocity as a New Fundamental Constant in Physics.

In 1929 the Hubble constant was defined as

$$H = dC \quad - (1)$$

where d is a power absorption coefficient and C is the velocity of light. It is proposed that:

$$H = d_1 v(\text{vac}) \quad - (2)$$

where d_1 is a universal absorption coefficient and $v(\text{vac})$ is the vacuum pseudo velocity. The Hubble constant is

$$H = 7.2 \times 10^6 \text{ m s}^{-1} \text{ per megaparsec} \quad - (3)$$

where

$$1.0 \text{ megaparsec} = 3.086 \times 10^{22} \text{ m} \quad - (4)$$

so

$$H = \frac{7.2 \times 10^6}{3.086 \times 10^{22}} \text{ s}^{-1} \quad - (5)$$
$$= 2.333 \times 10^{-28} \text{ s}^{-1}$$

The vacuum velocity from Note 339(2) is

$$v(\text{vac}) = 0.068C \quad - (6)$$

so

$$H = 0.068C d(\text{universal}) \quad - (7)$$

where it is proposed that $d(\text{universal})$ be a universal power absorption coefficient.

So:

$$\begin{aligned}d(\text{universal}) &= \frac{2.333 \times 10^{-28}}{0.068 \times 2.998 \times 10^8} - (8) \\&= 11.444 \times 10^{-36} \text{ m}^{-1} \\&= 1.1444 \times 10^{-35} \text{ m}^{-1}\end{aligned}$$

The spectroscopic unit of the power absorption coefficient is reper cm^{-1} , so: - (9)

$$d(\text{universal}) = 1.1444 \times 10^{-37} \text{ reper cm}^{-1}$$

and

$$v(\text{vacuum}) = 0.068c \text{ ms}^{-1} - (10)$$

It is proposed that there be two new fundamental constants of physics.

The idea behind eq. (1) is that the cosmological red shift is due to absorption of light by the matter between a distant source and the observer. It is not due to an expanding universe. In the special theory of relativity the velocity of an object is:

$$v = HD - (11)$$

where D is the proper distance to a galaxy.