Hubble equation through the eyes of a microbiologist

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Abstract

From the point of view of a microbiologist, the Hubble equation describes the expansion of the Universe as an exponential phase of the expansion of a colony of microbes-galaxies on the surface of a dark nutrient medium.

Text

According to the empirical Hubble equation, the speed of recession of galaxies is proportional to the radial distance from the Earth. Now it is considered as a cosmological law describing the expansion of the Universe [1] . The Hubble equation is:

$$\frac{d}{dt}r = H_0 \cdot r \qquad \text{differential form}$$

$$r(t) = r_0 \cdot e^{H_0 \cdot t} \qquad \text{integral form}$$

Here H_0=2.2·10^{-18} Hz is the Hubble constant; r is the radial distance between the Earth and the galaxy. From the point of view of a microbiologist, the Hubble equation describes the expansion of the Universe like an exponential phase of the expansion of a colony of microbes on the surface of a nutrient medium [2,3]. In this case, H0 is the specific growth rate of the galaxy colony and r0 is the starting radius of the colony. Figure 1 shows the exponential phase of the expansion of a galaxy colony over the surface of a dark medium. The starting radius corresponds to the distance to the nearest galaxy, Andromeda. Figures 2-3 show Hubble plots for this process.

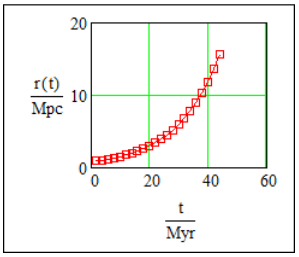
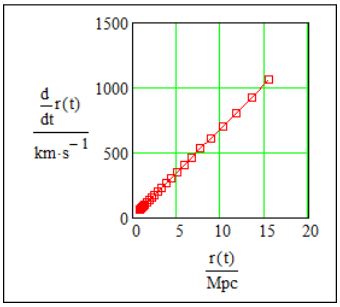


Fig.1 Exponential phase of the expansion of a colony of galaxies.



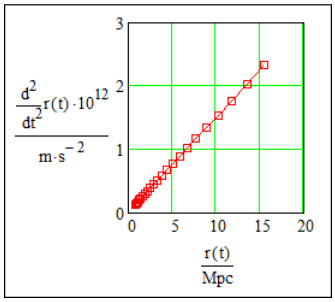


Fig. 2-3. Velocity and acceleration of the exponential phase of the expansion of a galaxy colony over the surface of a dark medium.

If we consider the expansion of a colony of galaxies within the framework of the diffusion-wave model, then the criterion relation will be valid for it:

$$\frac{u^2}{D \cdot H_0} = 1 \quad ,$$

here u is the wave velocity, D is the diffusion coefficient or specific action.

Links

1. https://en.wikipedia.org/wiki/Hubble%27s_law
2. https://en.wikipedia.org/wiki/Bacterial_growth
3. https://en.wikipedia.org/wiki/Exponential_growth