Expansion of the Universe according to the Hubble equation - through the eyes of a microbiologist and nuclear physicist

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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 in the growth of a colony of galaxies on the surface of a dark nutrient medium. From the point of view of a nuclear physicist - as an extended birth of children by fission of the nuclei of the parent element.

Text

According to the empirical Hubble equation, the speed of the 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 $H_0=2.2\cdot10^{-18}$ 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 growth of a microbial colony on the surface of a nutrient medium [2,3]. In this case, H_0 is the specific growth rate of the galaxy colony and r_0 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 Andromeda galaxy. Figures 2-3 show Hubble plots for this process.

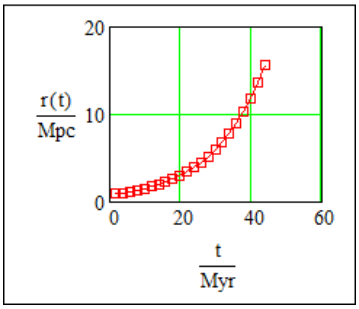
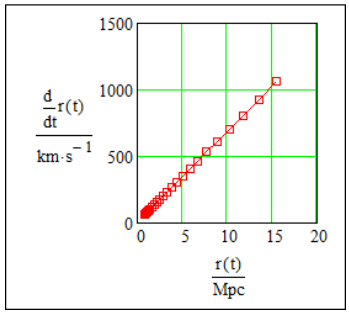


Fig.1 Exponential phase of the expansion of a colony of galaxies.



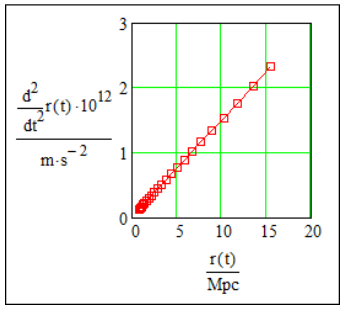


Fig. 2-3. Velocity and acceleration of the exponential phase of the expansion of a galaxy colony over the surface of a dark medium.

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.

Curiously, the common features of colonies of microbes and galaxies are also manifested in the similarity of patterns, schemes-images of their life, accessible to our visual perception. Figure 4 shows photographs of a colony of bacteria and a galaxy - their vortex spiral-like lifestyle is clearly visible.

Fig. 4. Photographs of a bacterial colony on agar jelly [4] (left) and the galaxy NGC 1232 (right).

The microbiological model of the Hubble equation allows us to look at dark matter as a medium for galaxies, and at their stellar arms as external organs of the body - like the cilia of bacteria - then we can assume that our life in the stellar arm is part of the galaxy's communication system. By the way, this, according to Vladimir Vernadsky, is indicated by the empirical principle of cephalization, which consists in the continuous complication of the nervous communication system of earthly life.
The microbiological model is attractive, but it is not the only one. The exponent admits several forms of the existence of the World - if you use familiar images, then this is 1 - a multiplying organism, 2 - a fissioning nucleus of an atom and 3 - a pulsating heart, - however, the work of the heart also involves the use of an imaginary exponent as a universal characteristic of rhythmic phenomena.
For example, a nuclear physicist can easily see in the Hubble equation the exponential stage of fission of 235U nuclei. Curiously, the graph of the mass distribution of the nascent nuclei of 235U daughter elements in Figure 5a is similar to the graph of the distributed density depending on the semi-major axis of the planetary orbits of the solar system in Figure 5b, taken from the amazing book of Nobel laureates [5].

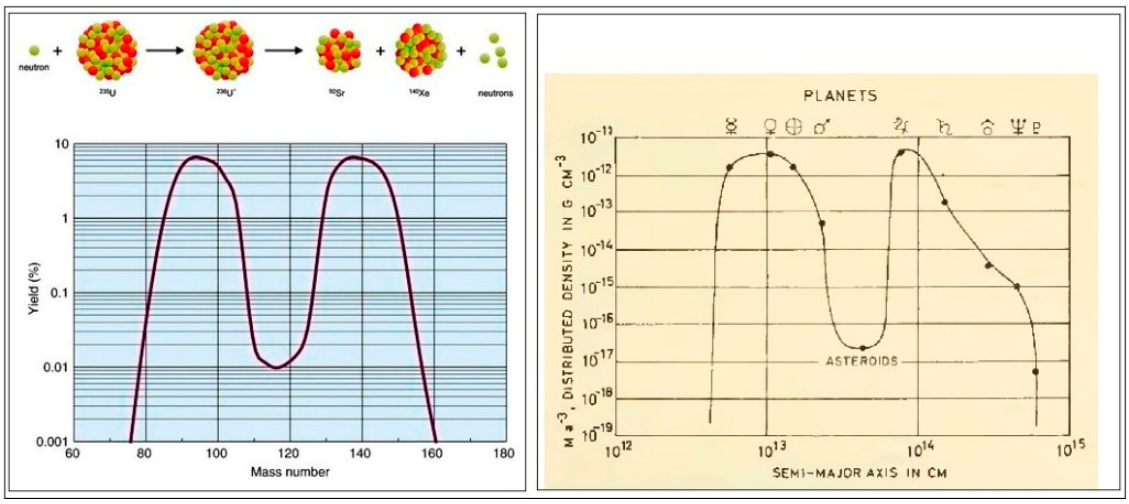


Fig. 5. a - yield of daughter nuclei of 235U fission depending on their mass number;
b - distributed density depending on the semi-major axis of the planetary orbits of the solar system.
The principle of similarity of analogies seems to be a useful tool in helping us to live creatively in the visible universe in accordance with the inexorable empirical principle of maximum geochemical activity.

Afterword

I like -
infinity and eternity.
I suppose -
they are not enough for happiness of our tribe.
But only with them -
enough space and time for everyone and everything ...

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
4. http://www.uvm.edu/pdodds/files/papers/others/everything/ben-jacob1997a.pdf
5. https://ia802703.us.archive.org/8/items/evolutionofsolar00alfv/evolutionofsolar00alfv.pdf