Darwin's Time and the Volume of the Memory's Device

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Abstract- It is proposed that the Darwin's time, the time elapsed since the birth of the first living being until now, is proportional to the volume of the memory device of the mammals. The proportionality constant depends only on the proton mass, of the speed of light in vacuum and of the Planck constant.

Hydrogen-bond kinetics [1] plays an important role on determining the transport properties of water. In a recent paper [2] we proposed that, protons in liquid water, behaves as a Fermi gas. There [2], the time between collisions of the protons current was estimated as

$$\tau = (M^2\, c)/(n\, \pi\, \hbar^2) = [(M^2\, c)/(\pi\, \hbar^2)]\, (V/N). \qquad (1)$$

In (1), M is the proton mass, c the speed of light in vacuum, $\hbar$ is the reduced Planck constant and, n = (N/V), is the number N of protons per unit of volume V.

Meanwhile in another paper [3], three characteristic times tied to the memories of the living beings were considered.

Using τ as a time-base as was done in [3], three times of persistency of information registered in the living beings memories has been estimated. These times were evaluated taking in account a criterion of an integration sense, meaning that we are looking for physical properties which depend on the whole system.

One of the possibilities to consider for the integrated time is assume that the overall time is the sum over the basic time units. We call this characteristic time τ_D, the Darwin's time. We write

$$\tau_D = N\,\tau = [(M^2\,c)/(\pi\,\hbar^2)]\,V. \qquad (2)$$

In obtaining (2), we have used (1).

As can be verified in relation (2), the Darwin's time here obtained is proportional to the volume of the device responsible by the memory of the living beings. The constant of proportionality depends only on fundamental constants of the physics. Putting numbers in (2), and by taking $V = 1.8\ cm^3$, we get

$$\tau_D = 4.3 \times 10^{16}\ s \approx 10^9\ years. \qquad (3)$$

As was pointed out by Joyce [4]: "The oldest rocks that provide clues to life's distant past are 3.6×10^9 years old and by the time cellular life seems already to be established!"

Another interesting paper about origins of life can be found in reference [5].

References

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