

Neutrino Kinetic Energy in Heracleatean World

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Abstract: Respecting Heracleatean dynamics expressed as $F = dp/dt + d(k/p)/dt$ in the case of the dynamics constant $k = 6.2721515 \times 10^{-46} \frac{kg^2m^2}{s^2}$ the maximal neutrino kinetic energy in the frequency equivalence range of several MHz is predicted.

Keywords: Heracleatean dynamics, neutrino ground mass, neutrino maximal kinetic energy, frequency equivalence

1. INTRODUCTION

In this paper the kinetic energy of neutrinos obeying Heracleatean dynamics [1] is the subject of interest.

2. THE ART

According to Heracleatean dynamics the relative mass of a physical body travelling with the speed higher than ground speed is upside limited as follows [2]:

$$m_{\text{maximal}} = \frac{1}{c} \sqrt{e^{\frac{m_{\text{ground}}^2 c^2}{k} + \ln k} - k} \quad (1)$$

Here ground mass replaces the rest mass known in usual relative dynamics. And k and c is the mass-energy constant and dynamics constant, respectively. The former equals the speed of light $c = 2.997\,924\,58 \frac{km}{s}$ [2]. The latter in the present case assumes the speculative value $k = 6.2721515 \times 10^{-46} \frac{kg^2m^2}{s^2}$ being in accordance with the gamma ray delay [3] and fitting the discrete communication model in Hydrogen atom [4].

It can be examined that the greater maximal relative mass is achieved by the greater ground mass and vice versa. So, neutrinos –known as the lightest particle till now [5]– should possess the smallest maximal relative mass. This fact could explain the low neutrino capacity to interact mechanically with other mass particles. Since the maximal kinetic energy is related to the ground mass as follows [2]:

$$W_k^{\text{maximal}} = m_{\text{maximal}} c^2 - m_{\text{ground}} c^2 = c \sqrt{e^{\frac{m_{\text{ground}}^2 c^2}{k} + \ln k} - k} - m_{\text{ground}} c^2 \quad (2)$$

Let us calculate the maximal kinetic energy of the expected values of neutrino ground mass ranged in the interval from $1\text{eV}/c^2$ to $0.01\text{eV}/c^2$. The given results are collected in Table1.

Table1. Expected values of maximal neutrino kinetic energy and its frequency equivalence

m_{ground} (eV/c ²)	$W_{\text{kinetic}}^{\text{maximal}}$ (eV)	ν_{maximal} (MHz)
1	4.2×10^{-9}	≈ 1
0.1	4.1×10^{-8}	≈ 10
0.01	4.1×10^{-7}	≈ 100

Despite the ground mass and the maximal relative mass being proportional to each other it is evident from Table1 that the neutrino ground mass and the neutrino maximal kinetic energy are contrary to expectations in inverse proportion. For the ground mass expressed in eV/c^2 and the frequency equivalence of kinetic energy expressed in MHz the product of both quantities is approximately constant and because of the suitable choice of physical units approximately equals the unit:

$$m_{ground} \cdot v_{maximal} \approx 1. \quad (3)$$

Then, for instance, in an inelastic collision of neutrinos of the ground mass yielding $0.02\text{eV}/c^2$ when the event is taking place at the maximal kinetic energy level the sound of 50MHz is expected to be heard.

3. CONCLUSION

In Heracleatean world possessing the proposed dynamics constant only a relatively small part of the concerned neutrino relative mass should be of the kinetic energy origin.

ACKNOWLEDGEMENT

Thanks God that less can do more.

DEDICATION

This fragment is dedicated to Ephesos, the ancient city in Anatolia

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