Relativistic Time and Distance in Heracletean Dynamics

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Abstract: Respecting Einsteinian dynamics the relativistic time and distance in Heracletean dynamics is proposed.

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1. INTRODUCTION

The relativistic time and distance in Heracletean dynamics as a hypernym of Einsteinian dynamics is the subject of interest of this paper.

In Heracletean dynamics the relativistic and ground mass are related as follows [1]:

\[ m_{\text{relativistic}}^2 a^2 = e^{\frac{m_{\text{ground}}^2 c^2 - k(1 - \ln k) + m_{\text{relativistic}}^2 c^2(a^2 - 1)}{k}}. \]  

(1)

Where the dynamics constant is denoted \( k \), the mass-energy constant being equal the approximate speed of light is denoted \( c \), and some speed expressed in the approximate speed of light is denoted \( a \). Applying the relation \( e^x \approx 1 + x \) the above equation (1) takes more polite form:

\[ m_{\text{relativistic}}^2 c^2 \approx \frac{m_{\text{ground}}^2 c^2 + k \ln k}{a^2 k + 1 - a^2}. \]  

(2)

At the zero dynamics constant, \( k=0 \), Einsteinian dynamics as a hyponym of Heracletean dynamics is recognized:

\[ \frac{m_{\text{relativistic}}}{m_{\text{rest}}} = \sqrt{\frac{1}{1 - a^2}}. \]  

(3)

Here the ground mass at the zero speed is called the rest mass.

In Einsteinian dynamics the factor \( \sqrt{\frac{1}{1 - a^2}} \) characterizes the relativistic time and distance, too:

\[ \frac{m_{\text{relativistic}}}{m_{\text{rest}}} = \sqrt{\frac{1}{1 - a^2}} = \frac{t}{t_0} = \frac{s_0}{s}. \]  

(4)

So taking into account the given analogy (4) one can propose the next relations for the relativistic time and distance in Heracletean dynamics:

\[ t^2 c^2 a^2 = e^{\frac{t_0^2 c^2 - k(1 - \ln k) + t^2 c^2(a^2 - 1)}{k}}, \]  

(5)

\[ t^2 c^2 \approx \frac{t_0^2 c^2 + k \ln k}{a^2 k + 1 - a^2}. \]  

(6)

And

\[ s_0^2 c^2 a^2 = e^{\frac{s_0^2 c^2 - k(1 - \ln k) + s_0^2 c^2(a^2 - 1)}{k}}. \]  

(7)

\[ s_0^2 c^2 \approx \frac{s_0^2 c^2 + k \ln k}{a^2 k + 1 - a^2}. \]  

(8)
Where $t_0$ and $s_0$ is time and distance in the ground state frame, respectively.

2. CONCLUSION

In Einsteinian as well as Heracletean dynamics the relativistic physical quantities – mass, time and distance – should be unambiguously of relativistic energy dependent.

LOGIC

Definitions are not disputable. And axioms are taken as to be true.

REFERENCES