

UNIT SPEED OF LIGHT SPEED HYPOTHESIS

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ABSTRACT. In this paper i will explore idea that could be solution to quantum gravity problem. Basic idea is that speed of light is not constant speed but an unit speed for all observers.

1. FIELD EQUATION

Whole idea can be represented by simple tensor equation that states equality between energy and speed of movement in direction $\mu\nu$ that gives metric tensor:

$$K_{\mu\nu} = \kappa T_{\mu\nu} \equiv g_{\mu\nu} \quad (1.1)$$

I can write both energy and speed movement tensor as:

$$K_{\mu\nu} = \begin{pmatrix} \frac{c^2}{\dot{x}^{00}} & \frac{c^2}{\dot{x}^{01}} & \frac{c^2}{\dot{x}^{02}} & \frac{c^2}{\dot{x}^{03}} \\ \frac{c^2}{\dot{x}^{10}} & -\frac{c^2}{\dot{x}^{11}} & -\frac{c^2}{\dot{x}^{12}} & -\frac{c^2}{\dot{x}^{13}} \\ \frac{c^2}{\dot{x}^{20}} & -\frac{c^2}{\dot{x}^{21}} & -\frac{c^2}{\dot{x}^{22}} & -\frac{c^2}{\dot{x}^{23}} \\ \frac{c^2}{\dot{x}^{30}} & -\frac{c^2}{\dot{x}^{31}} & -\frac{c^2}{\dot{x}^{32}} & -\frac{c^2}{\dot{x}^{33}} \end{pmatrix} \quad (1.2)$$

$$T_{\mu\nu} = \begin{pmatrix} \frac{\hbar^2}{T^{00}} & \frac{\hbar^2}{T^{01}} & \frac{\hbar^2}{T^{02}} & \frac{\hbar^2}{T^{03}} \\ \frac{\hbar^2}{T^{10}} & -\hbar^2 c^2 T^{11} & -\hbar^2 c^2 T^{12} & -\hbar^2 c^2 T^{13} \\ \frac{\hbar^2}{T^{20}} & -\hbar^2 c^2 T^{21} & -\hbar^2 c^2 T^{22} & -\hbar^2 c^2 T^{23} \\ \frac{\hbar^2}{T^{30}} & -\hbar^2 c^2 T^{31} & -\hbar^2 c^2 T^{32} & -\hbar^2 c^2 T^{33} \end{pmatrix} \quad (1.3)$$

I used most minus space-time metric signature in this equation. From it i can create a wave function that states all possible paths in space-time:

$$\Psi(\mathbf{x}) = \sum_P \frac{\int_P g_{\mu\nu} dx^\mu dx^\nu}{(\sum_P \int_P g_{\mu\nu} dx^\mu dx^\nu)} \int_P g_{\mu\nu} dx^\mu dx^\nu \quad (1.4)$$

Where i take integral of some path P of space-time, then divide it by sum of all paths of space-time that represents probability and multiply it by that space-time integral over that path. Constant κ can be equal to $\frac{1}{\hbar^2 c^2}$ or $\frac{1}{\hbar^2}$ depending on use of space or time coordinate as length. At measurement wave field changes from all possible path summed to one path.