Developed Lorentz-Einstein SRT-k-Factor of fourth order as an amplitude solution of damped planck-scaled oscillation equation

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Abstract:

Shown is the derivation of Lorentz-Einstein k-factor in SRT as analogy of amplitude of an enforced oscillation-differential equation of second order.This case is shown for the developed theorem as a second solution for advanced SRT of fourth order with an equation for planck-scaled, damped oscillation-states.This advanced term allows a calculation for any velocities by real rest mass, which could be negative though.This term is a development of classical Lorentz-term, which derivation from an oscillation-equation was shown in [10.]

key-words:

damped oscillation; SRT; k-factor; Einstein-Lorentz; differential equation of second order;developed SRT of fourth order; any velocities

1.Introduction:

In [10.] is shown, how the classical Lorentz-factor can be derived from an planck-scaled oscillation-equation for undamped states and not alone by kinematic considerations like in [1.],[2.],[3.] and in [5.],[6.],[7.],[8]. Now this classical term can be developed to an equation for damped, enforced states. The origin of the outer force is not discussed yet resp. has to be interpreted later may be as a gravitational force.If the oscillating-equation is set in the following form, with its planck-boundarie conditions ,there can be derived an advanced lorentzian k-factor as an solution resp. interpretation for amplitude of the damped oscillating system.This may show a deeper connection between SRT and quantum-theory. In analogy to the derivation of classical Lorentz-Einstein-transformation term of SRT from an undamped oscillation equation [10.] there can be derived a second advanced term, which analogy is damped, enforced oscillation. This term may lead to a form of SRT of fourth order [4.] with advanced transformations but possible negative energies,especially rest-energy. These energy problem of Lagrangian and Hamiltonian will be discussed in a later paper, not yet. Here the concentration is on the advanced Lorentz-term for damped, enforced oscillation with its planck-boundary conditions.

2.Calculation:

If following equation is set:

$$\ddot{\psi}+\Omega\cdot\dot{\psi}+\omega^2{}_{Pl}\cdot\psi=\omega^2{}_{Pl}\cdot e^{i\left(\frac{r}{r_{Pl}}\right)} \qquad (1.)$$

with Ω as a special frequency of the outer system, which enforces the damping action of local spacetime-conditions, then the ansatz for solution of this equation is like in [10.] again:

$$\psi = A^2 \cdot e^{i\left(\frac{r}{r_{Pl}}\right)} \qquad (2.)$$

_After some derivations and calculations there is the solution of amplitude factor as:

$$A = \pm\pm i \frac{1}{\sqrt[4]{\left(1-\frac{v^2}{c^2}\right)^2 + \frac{\Omega^2 \cdot v^2}{\omega^2_{Pl} \cdot c^2}}} \qquad (3.)$$

with its boundary conditions of Planck scale:

$$\dot{r}^2 = v^2 \qquad (4a.)$$

and

$$\omega_{Pl} \cdot r_{Pl} = c \qquad (4b.)$$

If is set:

$$\Omega = \frac{2a}{r_{Pl}} \qquad (5.)$$

there will be the equation from [9.],where a is the constant velocity of the enforcing outer system.

This time the phase-angle θ is not zero like in [10.], where the special case of classical SRT limits the velocity to its light-barrier in both sides at c in a form of analogy of undamped state, but it is:

$$\tan(\theta) = \frac{\frac{\Omega \cdot v}{\omega_{Pl} \cdot c}}{\left(1-\frac{v^2}{c^2}\right)} \qquad (6.)$$

3. Discussion:

This result means, that the light barrier at c is broken, and any velocities v are authorized but but there is the classical limit for damped, enforced oscillations in tan (θ) of phase angle at $\theta = \frac{\pi}{2}$ for v against c on both sides of c. However $v = c$ is allowed in damped state of local flat space-time.But there will be other problems like they are discussed in [5.], especally isotropy and causal difficulties may be come to appear in this analogy-form of damped space-time.

4.Summary and Conclusion:

An advanced term of Lorentz-Einstein transformation factor for SRT of fourth order can be constructed from a differential-equation of second order for the model of damped, enforced states, which allows any velocities in principal by advanced (possible euclidian) transformation equations but there will be some problems in this case like breaking of isotropy or causal interconnections.

5.References:

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