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Special Relativity Perfect

The question is: do the typical equations of special relativity exist?

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Synopsis

One is struck by the conflict of Einstein's Special Relativity with Lorentz's Principle of Corresponding States, kmown as the Aether Teory, both of which have great autority, the authors being Nobel Prize winners in physics.
In fact, for the former, everything moves and nothing is at absolute rest, while for the latter, there is a priviliged reference system where electromagnetic waves propagate.
"Both special relativity and Lorentz's principle of corresponding states accounted for the facts, and both agred with the experiment. Although they had a completely different view of the world, they agreed perfectly in their facts consequences" (cf. Tullio Regge. Infinity, p.86. Science Oscar Saggi Mondadori, 1996).
Where does the trick lie? Einstein had borrowed the equations of the ether, which are known as the Lorentz trasformations, and set them up as the basic theoretical formalism of his own theory, giving it an original interpretation: *"it is therefore demonstrated that, taking our kinematic principles as a basic, the electrodynamic foundations of the Lorentz the0ry of the electrodynamics of moving bodies conform to the principle of relativity" (cf. Albert Einstein. Pages 20, 21 of the Italian translation of the original text Zur Elektrodynamik bewegter körper of June 1905).* This was clear from the start, but there was one thing that was not convincing: two very different theories and concepts should lead to two not-similar mathematical systems being formulated to support their ideas. So it tumed out that Lorentz had fulfilled his task (by consistently setting the velocity equal to zero and the relativistic terme equal to one as minimum values), but Einstein had not, because he had inconsistently exspressed the same value as the aether theory.
Therefore, the question arose as to whether there were typical equations for special relativity and if so what they were, which only considered one's own

point of view. Thus, Perfect Special Relativity was developed, based on new equations and new kinematic principles.

By subjecting the relationships discovered to all situations and under different conditions to multiple experiments, they receive experimental verification down to the last decimal place. There examples of experiment are reported in the Essay with great succes.

The aim of this book is sto comunicate this great discovery to the entire Scientific Community.

T H E O R Y

by David Gubbiotti

The Perfect Special Relativity: Theory

ABSTRACT

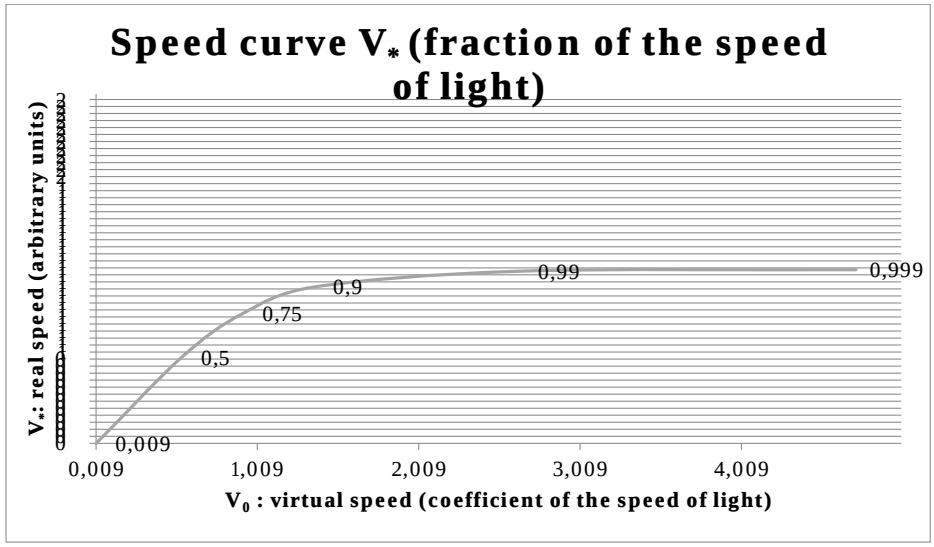
English.

The speed of light it vacuum, which is always the same, is proper to photons (mass-less particles in general), while the defined instantaneous speed, proper to fermions (bodies in general), is the average velocity calculated over an infinitesimal time interval (or small and arbitrary, then with an arbitrary instantaneous velocity). However, it does not exist since the shortest measured time interval is 247 zeptoseconds and the measurable one is Planck time. Nonetheless, from the average velocity, it is possible to derive the true speed and from their ratio the relativistic coefficient, which is always greater than 1. Therefore, no inertial reference system can measure an exactly zero velocity following the uncertainty principle, which rules out the possibility that two conjugate quantities, momentum and position, can be measured with infinite precision. This results in a larger and more precise system of equations than special relativity.

Italiano.

La velocità della luce nel vuoto, che è sempre la stessa, è propria dei fotoni (particelle senza massa in generale), mentre la velocità istantanea definita, propria dei fermioni (corpi in generale), è la velocità media calcolata in un intervallo di tempo infinitesimale (o piccolo e arbitrario, quindi con velocità istantanea arbitraria). Tuttavia, non esiste poiché l'intervallo di tempo più breve misurato è pari a 247 zeptosecondi e quello misurabile è il tempo di Planck. Nondimeno, dalla velocità media è possibile ricavare la velocità reale

e dal loro rapporto il coefficiente relativistico, che risulta sempre maggiore di 1. Pertanto, alcun sistema di riferimento inerziale può misurare una velocità esattamente nulla in conformità al principio d'indeterminazione che esclude che due grandezze coniugate, momento e posizione, possano essere misurate con precisione infinita. Ne deriva un sistema di equazioni più ampio e più preciso della relatività speciale.



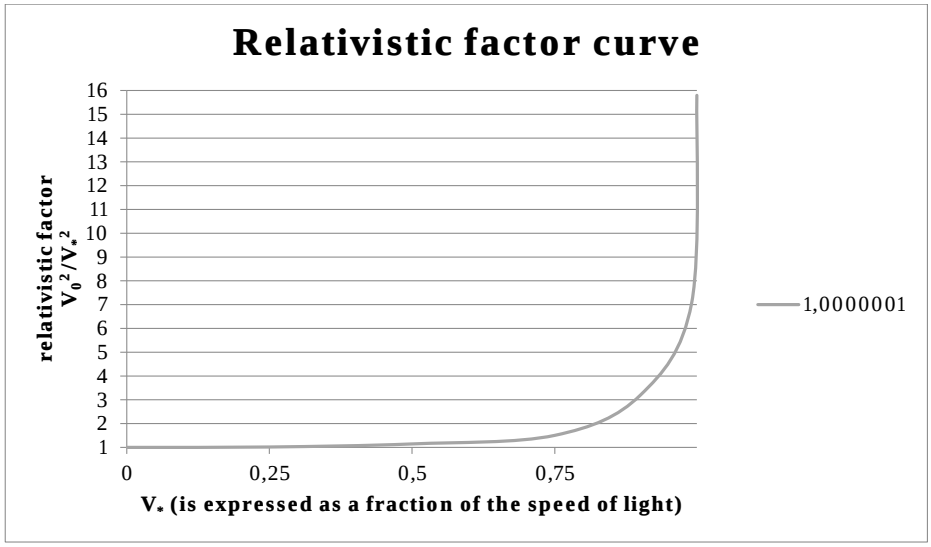
In the graphs the speed is approximated to 300.000 km/s.

The real speed V_*, quality of bodies, is a function of the virtual velocity V_0:

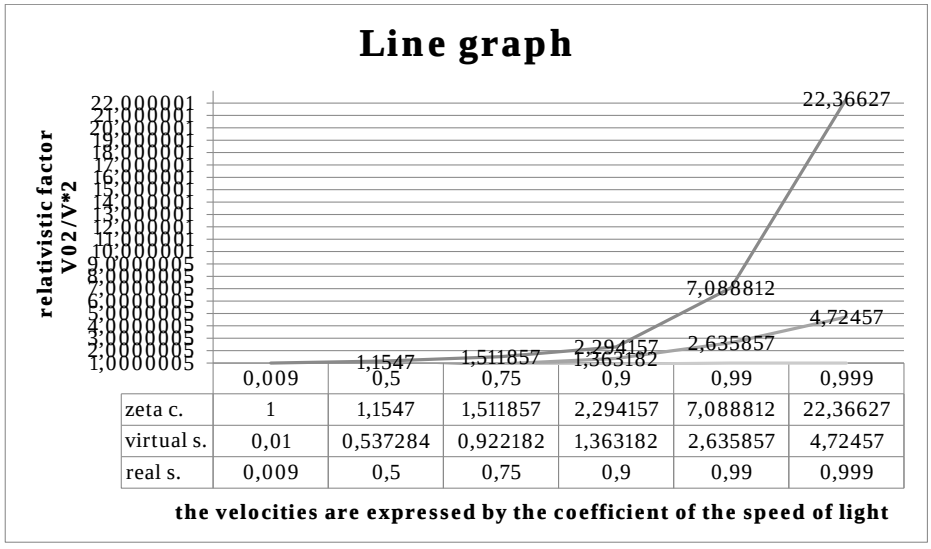
$V_* = \sqrt{\frac{-(V_0^4) \pm \sqrt{V_0^8 + 4c^4 V_0^4}}{2c^2}}$ (from equation 2). It shows: for classical physics the (virtual) speed can exceed that of light; so if the real speed (in the theory called relativistic speed even for very low values) is 0,009c - 0,5c – 0,75c - 0,90c – 0,99c – 0,999c, the classical one would be equal to about 0,001c - 0,537284c - 0,922182c - 1,363182c – 2,635857c – 4,72457c.

On the X axis it shows that the virtual speed reaches 4,72 times that of light, while on the Y axis the real speed does not exceed that of light and is equal to 0,999c.The dimensionless coefficient, called the relativistic factor (similar to

the Lorentz factor), instead, is a function of the real velocity: $\zeta = \frac{1}{\sqrt{1-\frac{V_*^2}{c^2}}}$ (equation 11), $\zeta = \frac{V_0^2}{V_*^2}$ (equation 15/a):



In the line chart, the values are more clearly expressed.



The relativistic coefficient, a function of the real velocity, in the graph is equal respectively to 1 - 1,1547 – 1,511857 - 2,294157 – 7,088812 – 22, 36627.

Furthermore, if in another graph, we take on the horizontal axis the value of the velocity (as a fractions of the speed of light) and on the vertical axis the values of kinetic energy (in arbitrary units) T_{rel}' s curve "*shows the trend of the kinetic energy of a particle as a function of its relativistic velocity. On the contrary, classical Newtonian energy,* T_{class} *grow much less, and moreover the speed is virtually not limited to the that of light.*" [1] In these cases, the two graphs quoted assume similar "*curves*".

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[1] (Cf. Antonio Ereditato, le particelle elementari, p. 57, Fig. 3.4; il Saggiatore, 2017).

SECTION 1: INTRODUCTION.

This scientific work has been built on the foundations of those published by Albert Einstein in the German journal Annalen der Physik in 1905 and by Werner Karl Heisenberg in Zeitschrift für Physik in 1927 mentioned to in bibliographical references 1,2,4. The research aims to standardize the fundamental principles of relativistic and quantum mechanics, as well as to complete special relativity, for the overview of the knowledge in that area has changed ever since due to the many theoretical and experimental advances that have occurred in the meantime.

SECTION 2: METHODS.

&1. MEMORY PRESENTATION. It is anticipated that the following verified method will be followed, both mathematically and conceptually: "*We proceed as physicists often do, we make a hypothesis. It will guide us in the reasoning of a very useful and important principle called the Occam's razor... It says you should try the simplest hypothesis first and then, only if it fails, complicate it a little at a time until you meet the experimental results... Once the decision was made to follow Occam... We will keep the promise to use only simple equations like those of Pythagoras...*"**[2]**

Indeed, if one were to make "*the same calculation using the arithmetic method, which of course more precise when it can be applied,*"**[3]**the results of the analytical calculation would be approximated to the first. To this method we will combine three principles of Einstein: the first gives priority to the logical concepts of physics rather than to the abstract ones of mathematics,**[4]**furthermore "*The mathematics of special relativity is very simple, one might even say trivial, as it does not go beyond the square root*".**[5]** The second consists in the generalization of a law that must apply throughout the Universe: "*Albert Einstein enjoyed a special sense of generalization and his very fine physical sense*" proved successful in all his

[2] (Cf. B. Cox, J. Forshaw, Perché $E=mc^2$? p. 65,66,67, Editore Ulrico Hoepli Milano, 2013).
[3] (Cf. Ing. G. Bessière, Il calcolo differenziale ed integrale, p. 154, Editore Ulrico Hoepli Milano,2006).
[4] In fact, the (RR) equations are a mere interpretation of Hendrik Lorentz transformations.
[5] (Cf. T. Regge, Infinito, p. 100, Scienza Oscar Mondadori, 2006).

works. The third requires the absence of adverse prejudice and pre-empted schemes: Einstein would not have made relativity if his concept of space-time had remained Newton's concept of absolute and independent space and time. **In addition, the (RR) has the advantage of considering only those at rest as classical physical quantities and linked to relativistic ones with γ: $t = \gamma t_0$, $l = \gamma^{-1} l_0$, $m = \gamma m_0$.** This will be understood as a special relativity (RS), when the necessity of distinction with the Theory (RSP) will be felt. Instead, for (RR) it will be understood indifferently as being both (RS) and (RSP). An example is the speed composition theorem, in which the Lorentz-Einstein notation of speeds and the Gamma factor are to be replaced by the speed and Zeta coefficient symbols of the Theory. The Theory's role consist of completing the (RR) from which the name of the (RSP). Moreover, for (RS) two inertial reference system (denoted here by SR i.), are mutually stationary or in uniform rectilinear motion with believed perfect symmetry, for the (RSP), however, not even *conventionally* 1 *SR i.* can be considered *exactly motionless in relation to the other, but in small, non-apparent motion.* Not only that, but it proves that the relativistic velocity marked (V_*) *here is related via equations 1, 2 and 15/a to the classical velocity marked* (V_0). However, since only V_* is real, for low speeds the transformations, the compositions of velocities and the resulting equations of (RSP), $V_0 = \left(\sqrt{\zeta} V_*\right)$.

&2. SCIENTIFICITY. The equations (1) and (2) are derived by unifying the concepts of relativistic and classical mechanics. Other formulae are deduced from these. Mathematical proofs are provided for all of them. The results obtained correspond to those considered correct by the Scientific Community.

&3. REPRODUCIBILITY. The procedures for calculating the various physical quantities are distinguished by the value expressed by the energy. For those high that are recorded on the accelerators, determine the coefficient (ζ) and go back to the values of other physical quantities, while for low energies from