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Negatio!

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Contents ***News***

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Ilija Barukčić. Negation - The general form of Einstein's relativistic correction, pp. 5-24.

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Negation - The general form of Einstein's relativistic correction.

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Abstract

It is claimed that it is not possible to reach the speed of the light. This impossibility is equally somehow associated with the difficulty to divide by zero since if the velocity v = c, the speed of the light, Einstein's relativistic correction (=ERC) which is known to be ERC=(1 - (v=c)²/(c²))$^{1/2}$ would become equal to ERC=(1- (1)²) = 0. A well known position today is that a division by zero doesn't work, the same is claimed to be undefined. Does both difficulties belong together? Has the claimed impossibility to reach the speed of the light to do something with the impossibility to divide by zero? Thus, what could happen if we would be able to reach the speed of the light, are there any laws, which determine this situation? What happens, if we divide by zero? What is zero at all, who has answered the question what zero exactly really is? This publication will make the proof, that under certain conditions it appears to be possible to reach the speed of the light. This appears to be possible because

negation - the general form of Einstein`s relativistic correction

plays an important and double-sided role.

Key words: Zero, One, Division by zero, Logic, Relativistic correction, Einstein, Barukčić.

1. Background

The (logical) negation is known to be an operation which has the capability to change true (=1) to false (=0) and false (=0) to true (=1) or in general something to its own other and vice versa. Strictly speaking, negation has to do with changes. A double negation is known to be the negation of the negation.

In the first place, it must be said that negation is dealing with the relation between X and Anti X, which in realising itself equally resolves itself. The same X and Anti X passes into a higher form of development since it has for its result its own negation.

In general, the negation of something is not a process where a self-contradictory does resolve itself into an empty and abstract nothingness, an abstract nullity. The result of a negation is higher and richer than its predecessor and contains something more than its predecessor. Such a result of development constitutes a new unity of X and Anti X, a new contradiction is "born".

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2. Material and Methods

2.1. Zero - the unity and the struggle of a positive and a negative

Zero is not purely on its own account and devoid of any relations, zero is at least determined by the unity of a positive and a negative. There appears to be nowhere on earth or somewhere else any zero which does not contain within itself both, the positive and the negative. Zero as a self-contradictory since is the unity of a positive and a negative. But equally in zero the positive is just as much as the negative and vice versa. All that is necessary to achieve a further progress from zero is that a self-contradictory that resolves itself into zero does equally not resolve itself into an abstract nothingness. Of course, we are speaking here of a particular actual zero. Zero is not an absolute zero, zero is an relative zero, zero is a zero of a very concrete something. But even zero as the negation of itself in its own self, zero as an infinite general is not free of limitation. Zero as an determinate is restoring it self from its own determinate non-being, from an determinate something, is itself a simple relation to self. Zero, contrasted with the other of itself is equally determined by the other of its self. Zero is thus determined by the relation of X and Anti X.

$$0 = +1 - 1 \qquad (1)$$

$$0 = +10 - 10 \qquad (2)$$

$$0 = +100 - 100 \qquad (3)$$

$$0 = +1000 - 1000 \qquad (4)$$

$$0 = +10000 - 10000 \qquad (5)$$

$$0 = +1000000000 - 1000000000 \qquad (6)$$

$$0 = +10000 \ldots\ldots\ldots\ldots\ldots\ldots - 10000 \ \ldots\ldots\ldots\ldots\ldots\ldots \qquad (7)$$

Zero as an indeterminate whole contains its other moment, the very determinated positive and the very determinated negative. It is the positive of a concrete something and the negative of the a concrete something which constitute zero. Zero as its own other contains thus a reference to its other, its own non-being. The positive and the negative as moments of zero are different in one and the same identity and thus opposites. Zero as the unity of identity and difference is constituted and determined by opposites. The positive and the negative as determinations which constitute zero are as such very concrete and determined opposites. Zero is thus only through this its own other or through its own non-being.

In zero, the positive is only the opposite of its own other, the one is not as yet negative, and the other is not as yet positive. In zero both are thus the negative to one another. The positive inside zero is what it is, through the other, through the negative, through its own non-being and it is equally only in so far as the other is not. The positive inside zero is thus what it is, only through the non-being of the other and vice versa the negative too. On the other hand, each is in its own self positive and negative too. The negative is not only a negative as contrasted with its own other. The positive and negative as moments of zero possesses within itself the determinatedness whereby they are the positive and negative. The positive and the negative as the two sides of zero are as thus separated in zero and different but equally they are just as much tighten together by zero, they own negation which separates them. Both are inseparable in zero and equally related as sheer others. The positive has in its own self, the negative, the other of itself and is thus the unity of itself and its other.

Closer consideration shows that zero is supposed to be not just the zero as such, the pure nothing, the emptiness, the indeterminatedness, but the zero of something, the zero of 1, the zero of 1000000000. Zero is thus a determinated zero. Thus, let 0(1) denote the zero that is constituted or determined by 1. Let 0(1000000000) denote the zero that is constituted or determined by 1000000000. Let 0(X) denote the zero that is determinated by X. It is the same zero that is constituted by different something's. The zero is grounded on a difference. It is the same zero which includes within itself the difference e.g. $1 \neq 1000000000$, and equally it is true that

$$+1 - 1 = 0 = +1000000000 - 1000000000 \tag{8}$$

$$+1[kg]*c^2 - 1[kg]*c^2 = 0 = +1000000000[kg]*c^2 - 1000000000[kg]*c^2 \tag{9}$$

The zero which is constituted by 1 appears not to be equivalent to the zero which is constituted by 1000000000. Only, both zeros are zeros and thus identical and equally both zero are different, because they are not constituted by the same something, which is the contradiction. It is at the end that an energy content of $+1[kg]*c^2 - 1[kg]*c^2$ united in zero cannot be equal to an energy content of $+1000000000[kg]*c^2 - 1000000000[kg]*c^2$ although united in zero. If something can develop from zero that is constituted by an energy content of $+1[kg]*c^2 - 1[kg]*c^2$, the same something cannot be equal to infinity otherwise the law of the conservation of energy would be violated. The energy content of a mass of 1 [kg] ≠ energy content of a mass of 1000000000 [kg]. But besides of this fact in zero both are indeed identical. How can this be, what are the consequences?

It may be true that zero can denote the emptiness and indeterminatedness as such, but only under certain conditions and not as such. Zero is not only the emptiness and indeterminatedness as such, there is equally a negation or a distinguishing inside zero too. Zero is equally a determinated zero! Zero is in accordance with this determination as a negation in its self a simple self-relation, zero is as the negation of the negation equally a determinate zero and returns to itself through its own negation.

Though, in fact, the indeterminatedness which is present within zero is not an empty product, is not the pure nothing, the pure emptiness. Zero as a self-identical zero is an indeterminate zero. On the other hand, zero is equally a determinate zero and thus the opposite of this, zero is no longer only self-identity but equally a negation and therefore a difference of itself from itself within its own self. Only, indeterminatedness as such is opposed to determinatedness. Zero as so opposed to itself is within itself determinate. What emerges from this consideration is, therefore, that it is the very indeterminatedness of zero which constitutes its own determinatedness. Although zero is an indeterminate something, it includes within it self the other of itself and is thus the contradiction. If there were any justification that zero itself have to be of such a nature that it is something purely abstract, a purely indeterminate zero, that another could not connect itself with the same, such a zero could indeed not bridge the gap between itself and an other and any further development from zero would not be possible, a division by zero would be impossible. Can something develop out of zero?

In so far, even if we should be able to reach the speed of the light, we would not enter a world of nothingness and emptiness but an other stage of development, another stage of the relation between X and Anti X. On this account, classical logic seems not to allow an other conclusion.

2.2. The definition of zero.

Zero as such is defined, constituted and determined by a concrete of X and Not X.

The definition of zero I.

Let

X		denote a Bernoulli random variable,
Not X		denote the otherness of X,
C	=	X OR (Not X) = X + (Not X) = 1,
0		denote zero that is related to X and Anti X,

Then

$$\mathbf{0 = X * (Not\ X).} \tag{10}$$

Proof.

$$X = X \tag{11}$$

$$X * (Not\ X) = X * (Not\ X) \tag{12}$$

$$\text{Recall, } C = X + (Not\ X). \tag{13}$$

$$\text{Thus, } Not\ X = C - X. \tag{14}$$

$$X * (C - X) = X * (Anti\ X) \tag{15}$$

$$(\Delta X)^2 = (C * X) - (X * X) = X * (Not\ X) \tag{16}$$

The laws of classical logic and elementary algebra are valid. According to classical logic something and its own opposite cannot exist at the same space-time or in other words. It is not possible, that X is at the same time X and equally Not X, its own negation, its own opposite too. We obtain the next equation.

$$\mathbf{X * (Not\ X) = 0} \tag{17}$$

Q. e. d.

Recall, $(\Delta X)^2 = (C*X) - (X*X)$ is identified as the inner contradiction of X (Barukčić 2007d, p. 26). A definition of zero in accordance with classical logic and Einstein's relativity assumes, the zero is not an absolute zero, zero is a relative zero and is defined and determinated by the concrete relationship of X and Not X. Zero, the empty, may define the emptiness and indeterminatedness but is equally determined by the relation of X and Not X too. Zero as the "place" where X and Not X withdraw is equally determinated by the same X and Not X. This basic determinatedness of zero can be use to divide by zero. When we divide something by zero, we divide the same something at least by its own inner contradiction

$$(\Delta X)^2 = (C * X) - (X * X).$$

The basic relation between X and Anti X.

Let

X denote something existing independently of human mind and consciousness, f. e. a measurable random variable, a quantum mechanics object etc..

Anti X denote the otherness of X, the opposite of X, the Not X, the complementary of X, the local hidden variable of X, the Anti X,

0 denote zero that is related to X and Anti X.

C = X + (Anti X).

Let the rules of classical bivalent logic be valid.

Then

$$-X*(\text{Anti } X) = 0$$

Proof.

$$X = X \tag{18}$$

$$X * (\text{Anti } X) = X * (\text{Anti } X) \tag{19}$$

$$X * (\text{Anti } X) = 0 \tag{20}$$

$$X * (\text{Anti } X) = +X - X \tag{21}$$

Recall, C = X + (Anti X).

$$X * (\text{Anti } X) = (C - (\text{Anti } X)) - X \tag{21a}$$

$$X * (\text{Anti } X) = C - (\text{Anti } X) - X \tag{21b}$$

$$X * (C - X) = +X - X \tag{22}$$

$$(C*X) - (X)^2 = +X - X \tag{23}$$

$$(C*X) + X - (X)^2 = +X \tag{24}$$

$$X - (X)^2 = +X - (C*X) \tag{25}$$

$$X - (X)^2 = +X(1 - C) \tag{26}$$

$$X - (X)^2 = +X(1 - (X + (\text{Anti } X))) \tag{27}$$

$$X - (X)^2 = +X - (X)^2 - (X*(\text{Anti } X)) \tag{28}$$

$$0 = 0 - (X*(\text{Anti } X)) \tag{29}$$

$$0 = -(X*(\text{Anti } X)) \tag{30}$$

Q. e. d.

2.3. Einstein's basic field equation.

Recall, the below mathematical form of Einstein's field equation is for the $-+++$ metric sign convention. The $-+++$ metric sign convention is commonly used in general relativity. Einstein field equations were initially formulated in the context of a four-dimensional theory. However, Einstein field equations can be seen to hold in n dimensions too.

Einstein's basic field equation (EFE for the $-+++$ metric sign convention) defines zero.

Let

R_{ab} denote the Ricci tensor,
R denote the Ricci scalar,
g_{ab} denote the metric tensor,
T_{ab} denote the stress-energy tensor,

h denote Planck's constant, h ≈ **(6.626 0693 (11)) * 10 $^{-34}$ [J * s],**
π denote the mathematical constant π, also known as **Archimedes' constant.** The numerical value of π truncated to 50 decimal places is known to be about

π ≈ 3.14159 26535 89793 23846 26433 83279 50288 41971 69399 37510,

c denote the speed of all electromagnetic radiation in a vacuum, the speed of light, where

c **= 299 792 458 [m / s],**

γ denote Newton's gravitational 'constant', where

γ ≈ (6.6742 ± 0.0010) * 10 $^{-11}$ [m^3 / (s² * kg)],

Einstein's field equation describes how a field or energy (or matter) and time changes space and vice versa. Einstein's basic field equation (EFE) is usually written in the form

$$(((4 * 2 * \pi * \gamma) * T_{ab}) / (c^4)) + ((R * g_{ab}) / 2)) = (R_{ab}). \qquad (31)$$

The stress-energy-momentum tensor is known to be the source of space-time curvature and describes more or less the density and flux of energy and momentum in space-time in Einstein's theory of gravitation. Philosophically, let the stress-energy-momentum tensor denote the **energy**.

The metric of space-time is determined by the matter and energy content of space-time. The Ricci scalar/metric tensor completely determines the curvature of space-time and defines such notions as *future, past,* distance, volume, angle. Philosophically, let the Ricci scalar/metric tensor denote the **time**.

The Ricci tensor, named after Gregorio Ricci-Curbastro, is a key term in the Einstein field equations and more or less a measure of *volume distortion*. Philosophically, let the Ricci tensor denote the **space**.
Zero is not only a number, zero is a natural process too and can be defined by Einstein's basic field equation too.

According to Einstein, curved space-time as caused by matter and energy is the cause of gravitation.

Einstein's basic field equation (EFE for the -+++ metric sign convention) defines zero.

Let

X denote something existing independently of human mind and consciousness, f. e. a measurable random variable, a quantum mechanics object etc..

Anti X denote the otherness of X, the opposite of X, the Not X, the complementary of X, the local hidden variable of X, the Anti X,

R_{ab} denote the Ricci tensor,

R denote the Ricci scalar,

g_{ab} denote the metric tensor,

T_{ab} denote the stress-energy tensor,

h denote Planck's constant, $h \approx (6.626\,0693\,(11)) * 10^{-34}$ **[J * s],**

π denote the mathematical constant π, also known as **Archimedes' constant.** The numerical value of π truncated to 50 decimal places is known to be about

$$\pi \approx 3.14159\,26535\,89793\,23846\,26433\,83279\,50288\,41971\,69399\,37510,$$

c denote the speed of all electromagnetic radiation in a vacuum, the speed of light, where

$$c = 299\,792\,458 \text{ [m / s]},$$

γ denote Newton's gravitational 'constant', where

$$\gamma \approx (6.6742 \pm 0.0010) * 10^{-11} \text{ [m}^3 / (s^2 * kg)],$$

Einstein's field equation describes how a field or energy (or matter) and time changes space and vice versa. Einstein's basic field equation (EFE) is usually written in the form

$$(((4 * 2 * \pi * \gamma) * T_{ab}) / (c^4)) + ((R * g_{ab}) / 2)) = (R_{ab}).$$

Then

$$(G_{ab}) - (((4 * 2 * \pi * \gamma) * T_{ab}) / (c^4)) = X * (\text{Anti } X).$$

Proof.

$$(((4 * 2 * \pi * \gamma) * T_{ab}) / (c^4)) + ((R * g_{ab}) / 2)) = (R_{ab}) \qquad (32)$$

$$(((4 * 2 * \pi * \gamma) * T_{ab}) / (c^4)) = (R_{ab}) - ((R * g_{ab}) / 2)) \qquad (33)$$

Recall, Einstein tensor G_{ab} is defined as $(G_{ab}) = (R_{ab}) - ((R * g_{ab}) / 2)$

$$(((4 * 2 * \pi * \gamma) * T_{ab}) / (c^4)) = (G_{ab}) \qquad (34)$$

The energy and momentum within the space-time (the stress-energy tensor) equates with the curvature of space-time (Einstein tensor). Thus, let us take all away, where does both withdraw or disappear too?

$$(G_{ab}) - (((4 * 2 * \pi * \gamma) * T_{ab}) / (c^4)) = 0 \qquad (35)$$

Both withdraw into zero. Only, zero is defined as the unity of X and Anti X.

$$(G_{ab}) - (((4 * 2 * \pi * \gamma) * T_{ab}) / (c^4)) = 0 = (X) * (\text{Anti } X) \qquad (36)$$

At the end, we obtain the equation

$$(G_{ab}) - (((4 * 2 * \pi * \gamma) * T_{ab}) / (c^4)) = X * (\text{Anti } X) \qquad (37)$$

Q. e. d.

The curvature of space-time (Einstein tensor) equates with the energy and momentum within the space-time (the stress-energy tensor). But equally, both are determined by the basic relation between X and its own Anti X. In so far, if zero is defined by Einstein`s basic field equation then it is equally true that there cannot be something like an absolute and pure zero. Relativity must enter zero, zero as such is something relative, every random variable is determined and possess its own and relative zero.

3. Results

3.0. Negation and classical logic

The definition of zero.

Let

X denote something that can take only the values either 1 or 0,

Not X denote the negation of X,

C = X + (Not X) = X OR (Not X) =1. We are respecting the law of the excluded middle.

0 denote a zero that is determinated by X and Not X.

Then

$$X * (\text{Not } X) = 0.$$

Proof.

$$X = X \quad (38)$$

$$X + (\text{Not } X) = X + (\text{Not } X) \quad (39)$$

Recall, C = X + (Not X).

$$X + (\text{Not } X) = C \quad (40)$$

Recall, C = 1.

$$X + (\text{Not } X) = 1 \quad (41)$$

$$(\text{Not } X) = C - X \quad (42)$$

$$X*(\text{Not } X) = (C - X)*X \quad (43)$$

$$X*(\text{Not } X) = (C * X) - (X)^2 \quad (44)$$

$$(\Delta X)^2 = (C * X) - (X * X) = X * (\text{Anti } X) \quad (45)$$

Recall, C = 1.

$$(\text{Not } X) = C - X \quad (46)$$

$$(\text{Not } X) = 1 - X \quad (47)$$

$$X*(\text{Not } X) = X*(1 - X) \quad (48)$$

$$(\Delta X)^2 = X*(\text{Not } X) = X - (X^2) \quad (49)$$

The laws of classical logic and elementary algebra are valid. According to classical logic something and its own opposite cannot exist at the same space-time or in other words. It is not possible, that X is at the same space-time X and equally Anti X, its own negation, its own opposite too. We obtain the next equation.

$$\textbf{Set } X = 1.$$

$$X * (\text{Not } X) = 1 * (1 - 1) = 1 * 0 = 0 \quad (50)$$

$$\textbf{Set } X = 0.$$

$$X * (\text{Not } X) = 0 * (1 - 0) = 0 * 1 = 0 \quad (51)$$

Q. e. d.

Recall, $(\Delta X)^2 = (C*X) - (X*X)$ is identified as the inner contradiction of X (Barukčić 2007d, p. 26). A definition of zero in accordance with classical logic and Einstein's relativity assumes, the zero is not an absolute zero, zero is a relative zero and is defined and determinated by the concrete relationship of X and Anti X. Zero, the empty, may define the emptiness and indeterminatedness but zero is equally determined by the relation of X and Anti X too. Zero as the "place" where X and Anti X withdraw is equally determinated by the same X and Anti X. This basic determinatedness of zero can be used to divide by zero. When we divide something by zero, we divide the same something at least by its own inner contradiction

$$(\Delta X)^2 = (C * X) - (X * X).$$

Let

X denote something that can take only the values either 1 or 0,

Not X denote the negation of X,

C = X + (Not X) = X OR (Not X) =1. We are respecting the law of the excluded middle.

0 denote a zero that is determinated by X and Not X.

Then

$$\textbf{(Not X)} = \textbf{C - X.}$$

Proof.

$$X = X \quad (52)$$

$$X + (\text{Not } X) = X + (\text{Not } X) \quad (53)$$

Recall, C = X + (Not X).

$$X + (\text{Not } X) = C \quad (54)$$

$$\textbf{(Not X)} = \textbf{C - X} \quad (55)$$

$$\text{Recall, } C = 1. \quad (56)$$

$$\text{Set } X = 1. \quad (57)$$

$$(\text{Not } X) = C - X = 1 - 1 = 0. \quad (58)$$

$$\text{Set } X = 0. \quad (59)$$

$$(\text{Not } X) = C - X = 1 - 0 = 1. \quad (60)$$

Q. e. d.

Let

X denote something that can take only the values either 1 or 0,

Not X denote the negation of X,

C = X + (Not X) = X OR (Not X) =1. We are respecting the law of the excluded middle.

0 denote a zero that is determinated by X and Not X.

Then

$$(X)^2 + (\text{Not } X)^2 = C^2.$$

Proof.

$$X = X \quad (61)$$

$$X + (\text{Not } X) = X + (\text{Not } X) \quad (62)$$

Recall, C = X + (Not X).

$$X + (\text{Not } X) = C \quad (63)$$

$$(X + (\text{Not } X))^2 = C^2 \quad (64)$$

$$(X)^2 + (2*X*(\text{Not } X)) + (\text{Not } X)^2 = C^2 \quad (65)$$

$$\text{Recall, } X*(\text{Not } X) = 0. \quad (66)$$

$$(X)^2 + (2 * 0) + (\text{Not } X)^2 = C^2 \quad (67)$$

$$(X)^2 + 0 + (\text{Not } X)^2 = C^2 \quad (68)$$

$$(X)^2 + (\text{Not } X)^2 = C^2 \quad (69)$$

$$(\text{Not } X)^2 = (C)^2 - (X)^2 \quad (70)$$

$$(\text{Not } X)^2/(C)^2 = ((C)^2 - (X)^2)/(C)^2 \quad (71)$$

$$(\text{Not } X)/(C) = (((C)^2 - (X)^2)/(C)^2)^{1/2} \quad (72)$$

$$(\text{Not } X)/(C) = (1 - ((X)^2/(C)^2))^{1/2} \quad (73)$$

$$\text{Recall, } C = 1. \quad (74)$$

$$\text{Set } X = 1. \quad (75)$$

$$(X)^2 + (\text{Not } X)^2 = C^2 = (1)^2 + (0)^2 = (1)^2 = 1 + 0 = 1. \quad (76)$$

$$\text{Set } X = 0. \quad (77)$$

$$(X)^2 + (\text{Not } X)^2 = C^2 = (0)^2 + (1)^2 = (1)^2 = 1 + 0 = 1. \quad (78)$$

Q. e. d.

The Pythagorean theorem appears to me is an immediate consequence of the very basic logical relation between X and its own (Not X) as X + (Not X) = C .

Let

X denote something that can take only the values either 1 or 0,

Not X denote the negation of X,

C = X + (Not X) = X OR (Not X) =1. We are respecting the law of the excluded middle.

0 denote a zero that is determinated by X and Not X.

Then

$$(\text{Not } X) = (C) * \left(1 - \left((X)^2 / (C)^2\right)\right)^{1/2}$$

Proof.

$$X = X \quad (79)$$

$$X + (\text{Not } X) = X + (\text{Not } X) \quad (80)$$

Recall, C = X + (Not X).

$$X + (\text{Not } X) = C \quad (81)$$

$$(X + (\text{Not } X))^2 = C^2 \quad (82)$$

$$(X)^2 + (2*X*(\text{Not } X)) + (\text{Not } X)^2 = C^2 \quad (83)$$

$$\text{Recall, } X*(\text{Not } X) = 0. \quad (84)$$

$$(X)^2 + (2 * 0) + (\text{Not } X)^2 = C^2 \quad (85)$$

$$(X)^2 + 0 + (\text{Not } X)^2 = C^2 \quad (86)$$

$$(X)^2 + (\text{Not } X)^2 = C^2 \quad (87)$$

$$(\text{Not } X)^2 = (C)^2 - (X)^2 \quad (88)$$

$$\text{Recall, } C = 1. \quad (89)$$

$$(\text{Not } X)^2 / (C)^2 = ((C)^2 - (X)^2) / (C)^2 \quad (90)$$

$$(\text{Not } X)^2 / (C)^2 = (1 - ((X)^2 / (C)^2)) \quad (91)$$

$$(\text{Not } X) / (C) = (1 - ((X)^2 / (C)^2))^{1/2} \quad (92)$$

$$(\text{Not } X) = (C) * (1 - ((X)^2 / (C)^2))^{1/2} \quad (93)$$

$$X*(\text{Not } X) = X* (C * (1 - ((X)^2 / (C)^2))^{1/2}) \quad (94)$$

$$\text{Set } X = 1. \quad (95)$$

$$X*(\text{Not } X) = X* (C *(1-((X)^2/(C)^2))^{1/2}) = 1* (1 *(1-((1)^2/(1)^2))^{1/2}) = 0 \quad (96)$$

$$\text{Set } X = 1. \quad (97)$$

$$X*(\text{Not } X) = X* (C *(1-((X)^2/(C)^2))^{1/2}) = 0* (1 *(1-((0)^2/(1)^2))^{1/2}) = 0 \quad (98)$$

Q. e. d.

(Logical) negation can be expressed as $(1 - ((X)^2 / (C)^2))^{1/2}$.

Let

X denote something that can take only the values either 1 or 0,

Not X denote the negation of X,

C = X + (Not X) = X OR (Not X) =1. We are respecting the law of the excluded middle.

0 denote a zero that is determinated by X and Not X.

$\sigma(X)^2$ denote the variance of X.

Then

$$\sigma(X)^2 = (X*(Not\ X))/(C)^2 = ((C*X) - (X)^2)/(C)^2$$

Proof.

$$X = X \tag{99}$$

$$X + (Not\ X) = X + (Not\ X) \tag{100}$$

$$\text{Recall, } C = X + (Not\ X). \tag{101}$$

$$X + (Not\ X) = C \tag{102}$$

$$\mathbf{(Not\ X) = C - X} \tag{103}$$

$$X*(Not\ X) = X*(C - X) \tag{104}$$

$$X*(Not\ X) = (C*X) - (X)^2 \tag{105}$$

$$(X*(Not\ X))/(C)^2 = ((C*X) - (X)^2)/(C)^2 \tag{106}$$

$$\sigma(X)^2 = (X*(Not\ X))/(C)^2 = ((C*X) - (X)^2)/(C)^2 \tag{107}$$

$$\text{Recall, } C = 1. \tag{108}$$

$$\text{Set } X = 1. \tag{109}$$

$$\sigma(X)^2 = ((C*X) - (X)^2) / (C)^2 = ((1*1)-(1)^2) / (1)^2 = 0. \tag{110}$$

$$\text{Set } X = 0. \tag{111}$$

$$\sigma(X)^2 = ((C*X) - (X)^2) / (C)^2 = ((1*0)-(0)^2) / (1)^2 = 0. \tag{112}$$

Q. e. d.

Let

X denote something that can take only the values either 1 or 0,

Not X denote the negation of X,

C = X + (Not X) = X OR (Not X) =1. We are respecting the law of the excluded middle.

0 denote a zero that is determinated by X and Not X.

Then

$$(\text{Not } X) = (C) *(1 - ((X)^2 / (C)^2))^{1/2}$$

Proof.

$$X = X \quad (113)$$
$$X^* (\text{Not } X) = X^*(\text{Not } X) \quad (114)$$
$$X^* (\text{Not } X) = 0 \quad (115)$$
$$X = 0 / (\text{Not } X) \quad (116)$$
$$\text{Set } X = 1. \quad (117)$$
$$1 = 0 / (1 - 1) = 0 / 0. \quad (118)$$
$$\text{Set } X = 0. \quad (119)$$
$$0 = 0 / (1 - 0) = 0 / 1 = 0. \quad (120)$$

Q. e. d.

If the laws of classical logic are valid and if we allow the division by zero, we must equally accept, that it is true that 0 / 0 = 1, which makes at least sense if zero is a determinated zero.

Let

X denote something that can take only the values either 1 or 0,

Not X denote the negation of X,

C = X + (Not X) = X OR (Not X) =1. We are respecting the law of the excluded middle.

0 denote a zero that is determinated by X and Not X.

Then

$$X / 0 = 1 / ((C) *(1 - ((X)^2 / (C)^2))^{1/2})$$

Proof.

$$X = X \quad (121)$$
$$X^* (\text{Not } X) = X^*(\text{Not } X) \quad (122)$$
$$X^* (\text{Not } X) = 0 \quad (123)$$
$$(X^* (\text{Not } X))/0 = 0 / 0 \quad (124)$$
$$(X^* (\text{Not } X))/0 = 1 \quad (125)$$

$$X / 0 = 1 / (\text{Not } X) \qquad (126)$$

$$\text{Recall, } (\text{Not } X) = (C) *(1 - ((X)^2 / (C)^2))^{1/2} \qquad (127)$$

$$(128)$$

$$X / 0 = 1 / ((C) *(1 - ((X)^2 / (C)^2))^{1/2}) \qquad (129)$$

Q. e. d.

If the laws of classical logic are valid and if we allow the division by zero, we must equally accept, that the division X / 0 can be expressed in terms of Einstein`s relativistic correction. (Logical) negation or Einstein`s relativistic correction are to some extent identical. With the help of classical logic, the (logical) negation and Einstein`s relativistic correction, it appears to be possible to perform the division by zero.

3.1. Negation and Einstein`s relativistic correction

Let

V		denote the velocity of something existing independently of human mind and consciousness,
Anti V		denote the negation of v, the otherness of V, the opposite of V, the anti velocity,
C		denote the speed of the light,
C	=	V + (Anti V) . There is no third between V and Anti V. We are respecting the law of the excluded middle.
0	=	V*(Anti V) denote according to classical logic that V and (Anti V) cannot exist at the same (space) time.

Then

$$(\text{Anti } V) = (C) * (1 - ((V^2)/(C^2)))^{1/2}$$

Proof.

$$V = V \qquad (130)$$

$$V^2 = V^2 \qquad (131)$$

$$V^2/C^2 = V^2/C^2 \qquad (132)$$

$$1 - (V^2/C^2) = 1 - (V^2/C^2) \qquad (133)$$

$$[1 - (V^2 / C^2)]^{1/2} = [1 - (V^2 / C^2)]^{1/2} \qquad (134)$$

$$[1 - (V^2 / C^2)] = [1 - (V^2 / C^2)] \qquad (135)$$

$$[((C^2 - V^2)/ C^2)] = [1 - (V^2 / C^2)] \qquad (136)$$

$$[(((C + V)* (C - V))/ C^2)] = [1 - (V^2 / C^2)] \qquad (137)$$

$$[((C + V)*(\textbf{Anti V})) / C^2] = [1 - (V^2 / C^2)] \qquad (138)$$

$$((\text{Anti } V) * (C + V)) / C^2 = 1 - (V^2 / C^2) \qquad (139)$$

$$((\text{Anti } V) * (C + V + \mathbf{0})) / C^2 = 1 - (V^2 / C^2) \qquad (140)$$

$$((\text{Anti } V) * (C + V \mathbf{+ V - V})) / C^2 = 1 - (V^2 / C^2) \qquad (141)$$

$$((\text{Anti } V) * (V + \mathbf{V} + C - \mathbf{V})) / C^2 = 1 - (V^2 / C^2) \quad (142)$$

$$((\text{Anti } V) * (\mathbf{2 * V} + C - V)) / C^2 = 1 - (V^2 / C^2) \quad (143)$$

$$((\text{Anti } V) * ((2 * V + (\mathbf{C - V}))) / C^2 = 1 - (V^2 / C^2) \quad (144)$$

$$((\text{Anti } V) \mathbf{*(} (2 * V) + (\mathbf{Anti\ V})\mathbf{)}) / C^2 = 1 - (V^2 / C^2) \quad (145)$$

$$((2 * V * \text{Anti } V) + (\text{Anti } V)^2) / C^2 = 1 - (V^2 / C^2) \quad (146)$$

$$((2 * V * \text{Anti } V) / C^2) + ((\text{Anti } V)^2 / C^2) = 1 - (V^2 / C^2) \quad (147)$$

$$(V^2 / C^2) + ((2 * V * \text{Anti } V) / C^2) + ((\text{Anti } V)^2 / C^2) = 1 \quad (148)$$

$$(V^2 + (2 * V * \text{Anti } V) + (\text{Anti } V)^2) / C^2 = 1 \quad (149)$$

$$(V + \text{Anti } V)^2 / C^2 = 1 \quad (150)$$

$$(V + \text{Anti } V)^2 = C^2 \quad (151)$$

$$\mathbf{V + Anti\ V = C} \quad (152)$$

$$\mathbf{(V + Anti\ V)^2 = C^2} \quad (153)$$

$$V^2 + (2*V*(\text{Anti } V)) + (\text{Anti } V)^2 = C^2 \quad (154)$$

Recall, $(V*(\text{Anti } V)) = 0$. (155)

$$V^2 + (2*0) + (\text{Anti } V)^2 = C^2 \quad (156)$$

$$(\text{Anti } V)^2 = (C^2) - (V^2) \quad (157)$$

$$(\text{Anti } V)^2 / (C^2) = ((C^2) - (V^2)) / (C^2) \quad (158)$$

$$(\text{Anti } V)^2 / (C^2) = (1 - ((V^2)/(C^2))) \quad (159)$$

$$((\text{Anti } V)^2 / (C^2))^{1/2} = (1 - ((V^2)/(C^2)))^{1/2} \quad (160)$$

$$(\text{Anti } V) / (C) = (1 - ((V^2)/(C^2)))^{1/2} \quad (161)$$

$$(\text{Anti } V) = (C) * (1 - ((V^2)/(C^2)))^{1/2} \quad (162)$$

Q. e. d.

3.2. Velocities near the speed of the light

Let

V denote the velocity of something existing independently of human mind and consciousness,

Anti V denote the negation of v, the otherness of V, the opposite of V, the anti velocity,

C denote the speed of the light,

C = V + (Anti V) . There is no third between V and Anti V. We are respecting the law of the excluded middle.

0 = V*(Anti V) denote according to classical logic that V and (Anti V) cannot exist at the same (space) time.

m_0 denote the mass at rest,

Anti m_0 denote the Anti (mass at rest),

0 = m_0* (Anti m_0).

m_r denote the relativistic mass,

Then

$$((m_0)/ (m_r))^2 + (V^2 / C^2) = 1$$

Proof.

$$V = V \quad (163)$$
$$V^2 = V^2 \quad (164)$$
$$V^2/C^2 = V^2/C^2 \quad (165)$$
$$1 - (V^2/C^2) = 1 - (V^2/C^2) \quad (166)$$
$$(1 - (V^2/C^2))^{1/2} = (1 - (V^2/C^2))^{1/2} \quad (167)$$
$$(m_r)^* (1 - (V^2/C^2))^{1/2} = (m_r)^*(1 - (V^2/C^2))^{1/2} \quad (168)$$
$$(m_0) = (m_r)^*(1 - (V^2/C^2))^{1/2} \quad (169)$$
$$((m_0)/ (m_r)) = (1 - (V^2 / C^2))^{1/2} \quad (170)$$
$$((m_0)/ (m_r))^2 = (1 - (V^2 / C^2)) \quad (171)$$
$$((m_0)/ (m_r))^2 + (V^2 / C^2) = 1. \quad (172)$$

Q. e. d.

In so far, if Einstein`s relativistic correction is true, then it is equally true that

$$((m_0)/ (m_r))^2 + (V^2 / C^2) = 1.$$

Let us assume that it is possible to reach the speed of the light.

If we should be able to reach the speed of the light, under this condition, the term $((m_0)/ (m_r))^2$ of the equation

$$((m_0)/ (m_r))^2 + (V^2 / C^2) = 1$$

must become $((m_0)/ (m_r))^2 = 0$. Only, is it possible at all, that the term $((m_0)/ (m_r))^2$ can become zero. Under which conditions can the term $((m_0)/ (m_r))^2$ become zero?

Strategy one.
One way appears to be the increase of (m_r) to infinity. In last consequence, we would need unimaginable amounts of energy to achieve this goal, which does not appear to be a practical solution. In so far, it doesn't make sense to lean that much on (m_r).

Strategy two.
The other way to achieve $((m_0)/ (m_r))^2 = 0$ of the equation above is that (m_0) must become zero. Is it possible somehow to manipulate (m_0) thus that the same can become zero or at least very near zero. Theoretically, this is possible. We need only Anti (m_0). If classical logic is valid, (m_0)*(Anti (m_0)) cannot exist at the same time, both would annihilate. Even if it should not be possible to isolate (m_0) from (m_r) to a very high degree (m_r can denote an interstellar vehicle), the use of (Anti (m_0)) could help us to reach velocities which are near the speed of the light. While the velocity v increases, the mass (m_r) increases too. Is it possible to gain some (Anti (m_0)) directly form an accelerating (m_r)? Under this condition, the increase of the mass while accelerating could be controlled. Besides of all this, we would not obtain a perpetuum mobile. The use of small amounts of (Anti (m_0)) to destroy (m_0) and to achieve thrust could be of help to reach velocities which could be very near to the speed of the light. This strategy promises to be more successful then the first one.

From the equation

$$((m_0)/ (m_r))^2 + (V^2 / C^2) = 1. \qquad (173)$$

immediately follows that

$$(m_0)^2 = (m_r)^2 *(1 - (V^2 / C^2)) \qquad (174)$$
$$((m_0)/ (m_r))^2 = (1 - (V^2 / C^2)) \qquad (175)$$
$$((m_0)/ (m_r)) = (1 - (V^2 / C^2))^{1/2} \qquad (176)$$

Set $X=(m_0)$. Set $C = (m_r)$. We obtain

$$((X)/ (C))^2 = (1 - (V^2 / C^2)) \qquad (177)$$
$$(1 - ((X)/ (C))^2) = (1 - (1 - (V^2 / C^2))) \qquad (178)$$
$$(1 - ((X)/ (C))^2) = (V^2 / C^2) \qquad (179)$$
$$(1 - ((X)/ (C))^2)^{1/2} = (1 - (1 - (V^2 / C^2)))^{1/2} \qquad (180)$$

Einstein`s relativistic correction and Negation are too a very high degree identical. The one is nothing then only the other as translated in an other language. The Lorentz transformations were derived by Joseph Larmor (1897) and Lorentz (1899, 1904) and are named by Henri Poincaré (1905) after the Dutch physicist and mathematician H. Lorentz (1853-1928). Albert Einstein's theory of special relativity is based on Lorentz transformations. In 1905 Einstein derived the Lorentz transformations under the assumptions of the constancy of the speed of light in any inertial reference frame and Lorentz covariance. Because of this, I use the notion Einstein's relativistic correction. Negation as a basic relationship between X and Anti X, Einstein's relativistic correction and the general contradiction law should enable us to divide by zero.

Let

V		denote the velocity of something existing independently of human mind and consciousness,
Anti V		denote the negation of v, the otherness of V, the opposite of V, the anti velocity,
C		denote the speed of the light,
C	=	V + (Anti V) . There is no third between V and Anti V. We are respecting the law of the excluded middle.
0	=	V*(Anti V) denote according to classical logic that V and (Anti V) cannot exist at the same (space) time.
m_0		denote the mass at rest,
Anti m_0		denote the Anti (mass at rest),
0	=	m_0* (Anti m_0).
m_r		denote the relativistic mass,

Then

$$((m_0)/ (m_r))^2 + (V^2 / C^2) = 1$$

Proof.

$$V = V \quad (181)$$
$$V^2 = V^2 \quad (182)$$
$$V^2/C^2 = V^2/C^2 \quad (183)$$
$$1 - (V^2/C^2) = 1 - (V^2/C^2) \quad (184)$$
$$(1 - (V^2/C^2))^{1/2} = (1 - (V^2/C^2))^{1/2} \quad (185)$$
$$(m_r)* (1 - (V^2/C^2))^{1/2} = (m_r)*(1 - (V^2/C^2))^{1/2} \quad (186)$$
$$(m_0) = (m_r)*(1 - (V^2/C^2))^{1/2} \quad (187)$$
$$((m_0)/ (m_r)) = (1 - (V^2 / C^2))^{1/2} \quad (188)$$
$$((m_0)/ (m_r))^2 = (1 - (V^2 / C^2)) \quad (189)$$
$$((m_0)/ (m_r))^2 + (V^2 / C^2) = 1. \quad (190)$$
$$(((m_0)*(\text{Anti } m_0)^2)/(m_r))^2+(((\text{Anti } m_0)^2*V^2)/C^2) = 1*(\text{Anti } m_0)^2 \quad (191)$$
$$((\quad 0 \quad)/(m_r))^2+(((\text{Anti } m_0)^2*V^2)/C^2) = 1*(\text{Anti } m_0)^2 \quad (192)$$
$$0 = (\text{Anti } m_0)^2 - (((\text{Anti } m_0)^2*V^2)/C^2) \quad (193)$$
$$0 = (\text{Anti } m_0)^2 *(1 - ((V^2)/C^2)) \quad (194)$$
$$0 = (\text{Anti } m_0)* (1 - ((V^2)/C^2))^{1/2} \quad (195)$$

Q. e. d.

4. Discussion

A division by zero appears to be possible, velocities near the speed of the light are not absolutely unrealistic. One would not arrive at this conclusion if there were no relationship between Einstein's relativistic correction and the (logical) negation.

On this point of view, (logical or Hegel's) negation and Einstein`s relativistic correction are to a great extent identical. No reasonable proof could be expected to permit a refutation of this profound discovery.

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References

Barukčić, Ilija. (1989). Die Kausalität. First Edition. Wissenschaftsverlag, Hamburg, pp. 218.
Barukčić, Ilija. (1997). Die Kausalität. Second Edition. Scientia, Wilhelmshaven, pp. 374.
Barukčić, Ilija. (2005). Causality. New Statistical Methods. First Edition. Books on Demand, Hamburg. pp. 488.
Barukčić, Ilija. (2006a1). Causality. New Statistical Methods. Second Edition. Books on Demand, Hamburg. pp.488.
Barukčić, Ilija. (2006a2). Photon electron telescope. First Edition. Books on Demand, Hamburg. pp. 76.
Barukčić, Ilija. (2006b). New Method For Calculating Causal Relationships, Montréal: XXIII International Biometric Conference, July 16 - 21 2006.
Barukčić, Ilija (2006c). “Local hidden variable theorem, ” *Causation* 1**,** 11-17.
Barukčić, Ilija (2006d). “Bell's Theorem - A fallacy of the excluded middle,” *Causation* 2**,** 5-26.
Barukčić, Ilija (2006e). “General contradiction law,” *Causation* 3**,** 5-26.
Barukčić, Ilija (2006f). “Unified field equation,” *Causation* 4**,** 5-19.
Barukčić, Ilija (2006g). “Anti γ - Negation of Newton's constant γ,” *Causation* 5**,** 5-13.
Barukčić, Ilija (2006h). “'Anti' CHSH inequality - natura facit saltus,” *Causation* 5**,** 15-25.
Barukčić, Ilija (2007a). “Darkness - The Negation of light,” *Causation* 1**,** 5-11.
Barukčić, Ilija (2007b). “Anti π - Negation of Archimedes' constant π,” *Causation* 1**,** 13-28.
Barukčić, Ilija (2007c). “Anti h - Negation of Planck's constant,” *Causation* 2**,** 5-14.
Barukčić, Ilija (2007d). “Particle-wave dualism,” *Causation* 2**,** 15-78.
Barukčić, Ilija (2007e). “Dialectical tensor logic,” *Causation* 3**,** 5-58.
Barukčić, Ilija. (2007f). “General contradiction law and the standard model,” *Causation* 4**,** 5-30.
Barukčić, Ilija. (2007g). “The constancy of the speed of light in vacuo,” *Causation* 4**,** 31-51.
Barukčić, Ilija. (2007h). “The Beginning Of Our World,” *Causation* 5**,** 5 - 50.
Barukčić, Ilija. (2007i). “The division by zero,” *Causation* 6**,** 5 - 24.
Boole, George. (1854). An Investigation Of The Laws Of Thought, On Which Are Founded The Mathematical Theories Of Logic And Probabilities. Reprint 1951. Oxford, Basil Blackwell.
Einstein, Albert. (1905). “Zur Elektrodynamik bewegter Körper,” Annalen der Physik Bd. XVII, p. 891-921.
Einstein, Albert. (1916). “Die Grundlage der allgemeinen Relativitätstheorie,” *Annalen der Physik*, Vierte Folge, Vol. 49, **7**, 769 - 822.
Einstein, Albert. (1908). “Über das Relativitätsprinzip und die aus demselben gezogenen Folgerungen,” *Jahrbuch der Radioaktivität und Elektronik* **4**, 411-462.
Einstein, Albert. (1908). “Berichtigungen zu der Arbeit: Über das Relativitätsprinzip und die aus demselben gezogenen Folgerungen,” *Jahrbuch der Radioaktivität und Elektronik* **5**, 98-99.
Hegel, G. W. H. *Hegel's Science of Logic*, Edited by H. D. Lewis, Translated by A. V. Miller (New York: Humanity Books, 1998), pp. 844.
Heisenberg, W. (1927). “Über den anschaulichen Inhalt der quantentheoretischen Kinematik und Mechanik,” *Zeitschrift für Physik* **43**, 172-198.
Thompson, M. E. (2006). "Reviews. Causality. New Statistical Methods. I. Barukčić," Editor Dr. A. M. Herzberg, International Statistical Institute. *Short Book Reviews*, Volume 26, No. 1, p. 6.

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X*Anti X = 0

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