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Darkness - The negation of light.

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Abstract

Darkness as the negation of light is everywhere around us. But why is it there, is it the absence of everything, where does it come from? Is darkness determined somehow? This publication will proof, that the darkness is determined by light and vice versa. Light is determined by darkness. The relation between light and darkness can be derived from Einstein's field equation and the unified field equation**.** The relation between light and determined darkness can be expressed as

$$darkness = 1 - (((((\ 4 * 4 * \ \pi * \gamma \ * T_{ab} \ )*(R* g_{ab})) / ((R_{ab})* (R_{ab})) \ )^{1/4} \ ) / c) \ \geq \ 0.$$

Key words: Light, Darkness, General relativity, Quantum mechanics, General Contradiction Law, Unified field equation.

1. Background

Darkness, a determinate negation, is determined by light and becomes thus illuminated darkness and vice versa. Light as such is determined by darkness and becomes thus darkened light. Illuminated darkness or darkened light have within themselves the moment of difference and are therefore determinate darkness or determinate light. Something as such can be distinguished only in determinate darkness or in determinate light. In pure, in absolute darkness there is seen just as much, and as little, as in pure or absolute light, the one is as good as the other. Pure darkness and the pure light are in so far the same. Light as such is taken as the pure positive and darkness as the pure negative. Darkness, as the pure negative, as the mere absence of light is equally self-identical and thus the positive too. It is a matter of infinite importance that in darkness there is light and in light there is darkness. Thus, light in its relation with darkness is not in relation with an other but purely in relation with its own itself. Darkness is the hidden local variable of light and vice versa. The opposition between the light and the darkness can be expressed by the general contradiction law.

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2. Material and Methods

Einstein's investigation of the relationship between energy, time and space ended in the discovery of the field equations of general relativity, which relate the presence of the curvature of spacetime and matter. Light as such is part of Einstein's field equation. It appears reasonable that the darkness can be expressed by Einstein's field equation too.

2.1. Einstein's field equation.

Einstein's theory of general relativity, especially **Einstein's field equation** describes how energy, time and space are interrelated, how the one changes into its own other and vice versa.

Einstein's basic field equation (EFE).

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, $h \approx (6.626\ 0693\ (11)) * 10^{-34}$ **[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

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

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

$$(((\ 4 * 2 * \pi * \gamma\ ) * T_{ab}\ )\ /\ (\ c^4\ ))\ +\ ((\ R * g_{ab}\ )\ /\ 2\ ))\ =\ (\ R_{ab}\ ). \qquad (1)$$

The stress-energy-momentum tensor as the source of spacetime curvature, describes the density and flux of **energy** and momentum in spacetime in Einstein's theory of gravitation. The stress-energy-momentum tensor is the source of the gravitational field, a source of spacetime curvature.

According to general relativity, the metric of spacetime is determined by the matter and energy content of spacetime. The Ricci scalar/metric tensor completely determines the curvature of spacetime and defines such notions as **future, past**, distance, volume, angle and ...

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**.

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3. Results

3.1. The relation between pure light and pure darkness

Theorem 1. The pure light.

Let

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

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

(1 - (c / c)) denote the pure darkness,

then

$$(c / c) * (1 - (c / c)) = 0.$$

Proof. Eq.

$$c = c \tag{2}$$

$$(c / c) = 1 \tag{3}$$

$$1 - (c / c) = 0 \tag{4}$$

$$(c / c) * 0 = 0 \tag{5}$$

$$(c / c) * (1 - (c / c)) = 0. \tag{6}$$

Q.e.d.

3.2. Identity of pure light and pure darkness

The pure light as the absence of darkness can be express by Einstein's field equation.

Theorem 2. The constancy of pure light.

Let

R_{ab} denote the Ricci tensor,

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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

$$c = ((4 * 2 * \pi * \gamma) * T_{ab}) / ((R_{ab}) - ((R^* g_{ab}) / 2)))^{1/4}$$

Proof.

$$(((4 * 2 * \pi * \gamma) * T_{ab}) / (c^4)) + ((R^* g_{ab}) / 2)) = (R_{ab}) \quad (7)$$

$$(((4 * 2 * \pi * \gamma) * T_{ab}) / (c^4)) = ((R_{ab}) - ((R^* g_{ab}) / 2)) \quad (8)$$

Let us assume, that the division by $((R_{ab}) - ((R^* g_{ab}) / 2))$ is allowed and possible.

If this division is not allowed or possible, let us set $((R_{ab}) - ((R^* g_{ab}) / 2)) = 1$.

$$(c^4) = ((4 * 2 * \pi * \gamma) * T_{ab}) / ((R_{ab}) - ((R^* g_{ab}) / 2)) \quad (9)$$

$$c = ((4 * 2 * \pi * \gamma) * T_{ab}) / ((R_{ab}) - ((R^* g_{ab}) / 2)))^{1/4} \quad (10)$$

Q. e. d.

The speed of the light, c, is constant, thus

$$c = ((4 * 2 * \pi * \gamma) * T_{ab}) / ((R_{ab}) - ((R^* g_{ab}) / 2)))^{1/4} = \text{constant}.$$

It is claimed that π and γ are constant, although there is contradiction (Barukčić 2006g) too. In this case it has to be that

$$(T_{ab}) / ((R_{ab}) - ((R^* g_{ab}) / 2)) = \text{constant}.$$

Let T_{ab} increase, in so far the increase of $((R_{ab}) - ((R^* g_{ab}) / 2))$ must happen in the same amount. Otherwise, the increase of T_{ab} could be only possible because $((R^* g_{ab}) / 2)$ decrease. Could this mean that energy is taken from time, that energy passes over into time and vice versa? Is the law of conservation of energy only relative and not that much absolute as thought?

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3.3. Darkness - the otherness of light

Darkness as the otherness of light is determined by light and vice versa. Is it possible that light includes within itself the darkness, the other of itself and at the same time to exclude the same out of itself?

Theorem 3. Darkness - the otherness of light.

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

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

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

c_d denote the determined light, where

$c_d = (((((4 * 4 * \pi * \gamma * T_{ab})*(R* g_{ab})) / (R_{ab})^2)^{1/4}) / c)$,

d_d denote the determined darkness,

$d_d + c_d = 1$,

γ denote Newton's gravitational 'constant', where

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

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

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

The unified field equations (Barukčić 2006f) is known to be

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

Then darkness as the absence of light is determined by the formula

$$1 - (((((4 * 4 * \pi * \gamma * T_{ab})*(R* g_{ab})) / ((R_{ab})* (R_{ab})))^{1/4}) / c) \geq 0.$$

Proof. Eq.

$$(((\ 4 *\ \pi * \gamma\ ) * T_{ab}\ )\ /\ (\ c^4\ ))\ *\ ((\ R^* g_{ab}\ )\ ))\ \leq\ ((R_{ab})^* (R_{ab}))\ /\ 4 \quad (11)$$

$$(\ (\ 4 *\ \pi * \gamma\ ) * T_{ab}\ )^*((\ R^* g_{ab}\ )\ ))\ \leq\ (\ c^4\ )\ ^*((R_{ab})^* (R_{ab}))\ /\ 4 \quad (12)$$

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Let us assume that the division by $((R_{ab})^* (R_{ab}))$ is allowed and possible.

Otherwise, let us set $((R_{ab})^* (R_{ab})) = 1$.

$$((4 * 4 * \pi * \gamma * T_{ab})*(R* g_{ab})) / ((R_{ab})* (R_{ab})) \leq (c^4) \quad (13)$$

$$((((4 * 4 * \pi * \gamma * T_{ab})*(R* g_{ab})) / ((R_{ab})* (R_{ab})))^{1/4}) \leq c \quad (14)$$

$$c_d = ((((4 * 4 * \pi * \gamma * T_{ab})*(R* g_{ab})) / ((R_{ab})* (R_{ab})))^{1/4}) / c \leq 1 \quad (15)$$

$$d_d = 1 - (((((4 * 4 * \pi * \gamma * T_{ab})*(R* g_{ab})) / ((R_{ab})* (R_{ab})))^{1/4}) / c) \geq 0 \quad (16)$$

Q. e. d.

4. Discussion

This publication has proofed that light is not only light. Pure light is equally the absence of darkness and vice versa. Pure darkness is the absence of light. The one excludes its own other out of itself. On the other hand, the relationship between light and darkness is determined by the fact that in light there is darkness and in darkness there is light. Darkness is not the absence of all light, darkness is determined by

$$d_d = 1 - (((((4 * 4 * \pi * \gamma * T_{ab})*(R* g_{ab})) / ((R_{ab})* (R_{ab})))^{1/4}) / c) \geq 0.$$

According to the general contradiction law it is true that

$$c_d * d_d \leq (1/4).$$

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