Anti Einstein – Refutation of Einstein's General Theory of Relativity

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Abstract: More than ninety years after publication, Einstein's general relativity theory is still a highly successful theory of gravitation. Meanwhile, general relativity theory has passed a lot of observational and experimental tests, opportunities to test the validity of general relativity are increasing. Yet more and more, some recent observational data (dark energy) indicate the need to test the logical consistency of Einstein's general relativity theory. The present investigation will refute Einstein's general relativity theory by the proof that Einstein's general relativity theory is not a complete physical theory.

Key words: Quantum mechanics, special and general relativity theory, unified field theory, causality.

1. Introduction

Einstein's general relativity theory [1] based on an abstract hypothetico-deductive approach to physics is regarded as a self-consistent theory and equally as one of the greatest achievements of the twentieth century physics. But it is probably only a question of time when scientific theories false or incomplete contradicting logic or observational facts will face its own end.

The history of the refutation of general relativity theory started at least with Einstein's modification of his own field equations by introducing the cosmological constant Λ, a term proportional to the metric g_{ae}. The cosmological constant times the metric term $\Lambda \times g_{ae}$ appeared first in Einstein's work "Kosmologische Betrachtungen zur Allgemeinen Relativitätstheorie" [2]. Einstein introduced the cosmological constant times the metric term $\Lambda \times g_{ae}$ as an independent parameter, to obtain something like a stable solution of his gravitational field equations. Hubble's [3] discovery of an expanding universe eliminated any need for a cosmological constant Λ. In striking contrast to other [4], Einstein had more than 35 years [5] to withdraw the introduction of the cosmological constant times the metric term $\Lambda \times g_{ae}$ publicly, but he did not. Today, the cosmological constant term $\Lambda \times g_{ae}$ appears as one of the main methodological weak points in Einstein's theory and not only a historical artifact.

Furthermore, it's important to take into account that Einstein (1879-1955) himself spent decades of his life to falsify his own gravitational theory, to derive a completely new geometrical field theory of (all) fundamental interactions (unified field theory). In fact, Einstein's attempts were in vain. Through all the years, a lot has been learned even from failed attempts to join the electromagnetic and gravitational field into a one and single hyper-field, but still a satisfactory inclusion of gravitation and electromagnetism into the field equations of a unified field theory, "a generalization of the theory of the gravitational field" [6], remains to be achieved.

2. Material and Methods

2.1. Einstein's Field Equation

Finally, in a paper submitted on November 25, 1915 (published on December 2, 1915), the 'final' version of Einstein's original [7] field equation appeared as

$$R_{ae} - \frac{R}{2} \times g_{ae} = \left(\frac{4 \times 2 \times \pi \times \gamma}{c \times c \times c \times c} \right) \times T_{ae} \quad (1)$$

where R_{ae} is the Ricci tensor, R is the Ricci scalar (the trace of the Ricci tensor), g_{ae} is the metric tensor (a 4 × 4 matrix) and T_{ae} is the stress-energy tensor of matter (still a field devoid of any geometrical significance), where π is Archimedes' constant (π=3.14...), γ is Newton's gravitational constant and c is the speed of light in vacuum. The Einstein field equations with the cosmological constant term $\Lambda \times g_{ae}$ included may be written in the form

$$R_{ae} - \frac{R}{2} \times g_{ae} + \Lambda \times g_{ae} = \left(\frac{4 \times 2 \times \pi \times \gamma}{c \times c \times c \times c} \right) \times T_{ae}. \quad (2)$$

left hand side = right hand side

In general, Einstein's field equation relates the curvature of space-time to momentum (the presence of matter and energy). In opposite to the right- hand side of the Einstein field equations, the left-hand side of the field equations is uniquely determined by physical and mathematical requirements. A new tensor, called Einstein tensor G_{ae}, can be built from Ricci tensor R_{ae} and the metric tensor g_{ae} of the left-hand side by the following formula

$$G_{ae} = R_{ae} - \frac{R}{2} \times g_{ae} \quad (3)$$

where G_{ae} is Einstein's tensor. According to Einstein [8] it is

$$g_{ae} \times g^{ae} = 4 \quad (4)$$

where g^{ae} is the matrix inverse of the metric tensor g_{ae}. The inverse metric tensor or the metric tensor, which is always symmetric, allow tensors to be transformed into each other. The Ricci scalar R (the trace of the Ricci tensor R_{ae}) is determined as

$$R = g^{ae} \times R_{ae}. \quad (5)$$

In general, it is

$$g_{ae} \neq g^{ae} \quad (6)$$

even if there may exist some circumstances or manifolds, in which this distinction is unnecessary. The metric tensor g_{ae} describes the gravitational field to some extent but the metric tensor g_{ae} is not an exact mathematical formulation of the gravitational field as such.

3. Results

3.1. Anti Einstein I

Claim.

In general, it is

$$-R+4\times\Lambda=\left(\frac{4\times 2\times\pi\times\gamma}{c\times c\times c\times c}\right)\times T_{ae}\times g^{ae}. \tag{7}$$

Proof.

Consider Einstein's field equation, which is

$$R_{ae}-\frac{R}{2}\times g_{ae}+\Lambda\times g_{ae}=\left(\frac{4\times 2\times\pi\times\gamma}{c\times c\times c\times c}\right)\times T_{ae}. \tag{8}$$

Taking the trace of both sides of Einstein's field equations it follows that

$$R_{ae}\times g^{ae}-\frac{R}{2}\times g_{ae}\times g^{ae}+\Lambda\times g_{ae}\times g^{ae}=\left(\frac{4\times 2\times\pi\times\gamma}{c\times c\times c\times c}\right)\times T_{ae}\times g^{ae}. \tag{9}$$

According to (4) and (5), it is straightforward to find that

$$R-\frac{4\times R}{2}+4\times\Lambda=\left(\frac{4\times 2\times\pi\times\gamma}{c\times c\times c\times c}\right)\times T_{ae}\times g^{ae} \tag{10}$$

At the end we obtain

$$-R+4\times\Lambda=\left(\frac{4\times 2\times\pi\times\gamma}{c\times c\times c\times c}\right)\times T_{ae}\times g^{ae}. \tag{11}$$

Q. e. d.

This solution of the Einstein field equations is valid even under circumstances where the stress-energy tensor T_{ae} is taken to be zero i. e. $T_{ae} = 0$. Under conditions where the energy-momentum tensor T_{ae} is zero, the field equations are also referred to as the vacuum field equations. But even under these circumstances, it is important to stress out, that matter/mass and energy are equivalent.

"Da Masse und Energienach den Ergebnissen der speziellenRelativitätstheorie das Gleichesind und die Energie formal durch den symmetrischenEnergietensor ($T_{\mu\nu}$) beschriebenwird, so besagt dies, daß das G-Geld [*gravitational field, author*] durch den Energietensor der Materiebedingt und bestimmtist." [9]

The stress-energy tensor T_{ae} contains all forms of energy and momentum which includes all matter present but of course any electromagnetic radiation too.

3.2. Anti Einstein II

Claim.

It is justified to assume that

$$R = \left(Anti\ \Lambda \right) + \Lambda. \tag{12}$$

Proof.

Consider again Einstein's field equation, which is

$$R_{ae} - \frac{R}{2} \times g_{ae} + \Lambda \times g_{ae} = \left(\frac{4 \times 2 \times \pi \times \gamma}{c \times c \times c \times c} \right) \times T_{ae}. \tag{13}$$

It follows once again that

$$R_{ae} \times g^{ae} - \frac{R}{2} \times g_{ae} \times g^{ae} + \Lambda \times g_{ae} \times g^{ae} = \left(\frac{4 \times 2 \times \pi \times \gamma}{c \times c \times c \times c} \right) \times T_{ae} \times g^{ae}. \tag{14}$$

Based on (4) and (5), it is not difficult to obtain again

$$R - \frac{4 \times R}{2} + 4 \times \Lambda = \left(\frac{4 \times 2 \times \pi \times \gamma}{c \times c \times c \times c} \right) \times T_{ae} \times g^{ae} \tag{15}$$

We rewrite this equation as

$$R - 2 \times R + 2 \times \Lambda + 2 \times \Lambda = \left(\frac{4 \times 2 \times \pi \times \gamma}{c \times c \times c \times c} \right) \times T_{ae} \times g^{ae}. \tag{16}$$

Taking the identity

$$-(2 \times R) + \left(2 \times \Lambda \right) = -2 \times (R - \Lambda) \tag{17}$$

into account, we arrive at

$$R - \left(2 \times \left(R - \Lambda \right) \right) + \left(2 \times \Lambda \right) = \left(\frac{4 \times 2 \times \pi \times \gamma}{c \times c \times c \times c} \right) \times T_{ae} \times g^{ae}. \tag{18}$$

According to (10), it is

$$R - \frac{4 \times R}{2} + 4 \times \Lambda = \left(\frac{4 \times 2 \times \pi \times \gamma}{c \times c \times c \times c} \right) \times T_{ae} \times g^{ae}. \tag{19}$$

Substituting this identity into (18), we obtain

$$R - \left(2 \times \left(R - \Lambda \right) \right) + \left(2 \times \Lambda \right) = R - \frac{4 \times R}{2} + 4 \times \Lambda \tag{20}$$

which is identical with

$$R-\left(2\times\left(R-\Lambda\right)\right)+\left(2\times\Lambda\right)=-R+4\times\Lambda. \tag{21}$$

Rearranging this equation yields

$$R+R-\left(2\times\left(R-\Lambda\right)\right)+\left(2\times\Lambda\right)-4\times\Lambda=0 \tag{22}$$

or in other words, it is

$$2R-\left(2\times\left(R-\Lambda\right)\right)-\left(2\times\Lambda\right)=0 \tag{23}$$

which is equivalent to

$$2R=\left(2\times\left(R-\Lambda\right)\right)+\left(2\times\Lambda\right). \tag{24}$$

In short, we divide (24) by 2. As we see, it is

$$R=\left(R-\Lambda\right)+\left(\Lambda\right). \tag{25}$$

From a theoretical point of view it proves to be necessary to define an anti-cosmological constant (AntiΛ) as

$$\left(Anti\ \Lambda\right)\equiv\left(R-\Lambda\right). \tag{26}$$

Hence, in general it is

$$+R=+\left(Anti\ \Lambda\right)+\Lambda. \tag{27}$$

Q. e. d.

The geometry of a (four-dimensional) manifold is determined by the energy-momentum contained in (space-) time. A manifold determined by the fact that there is no matter present, a manifold where the energy-momentum tensor T_{ae} vanishes, a manifold where the stress-energy tensor T_{ae} is taken to be zero i. e. $T_{ae} = 0$, is described by the vacuum Einstein equations too. Thus far, (27) is valid even under circumstances where the stress-energy tensor T_{ae} is taken to be zero i. e. where $T_{ae} = 0$ which is of general importance.

4. Discussion

For completeness, the Ricci curvature scalar R (25) is determined as $+R = +R$ **-Λ +Λ**. Thus far, we should note that -Λ +Λ = 0 and (25) reduces to $+R = +R$. Consequently, under conditions, circumstances and manifolds where the division of the Ricci scalar R by itself, the Ricci scalar R, is possible and allowed, we obtain $(R/R) = (R/R)$ or at the end +1 = +1, which is of course correct.

In fact, this publication presents *the first mathematical prove since Einstein's introduction of the cosmological constant Λinto his field equations* that there is indeed nothing mathematically or logically inconsistent with the cosmological constant Λ. In other words, the cosmological constant Λ is a logically consistent part of objective reality. But in the same respect, this does not mean at all, that Λ has to be treated or to be regarded as being a constant.

However, the nature of the Ricci scalar *R* appears to be a *self-contradictory*. The Ricci scalar *R* is no longer the complete emptiness and the absence of all determination but a determinate content. The Ricci scalar *R* is determined by the transition of the one into its own other and vice versa, the Ricci scalar *R* is determined as a unity of opposites. The Ricci scalar *R* as the manifestation of the transition of the cosmological constant Λ into the anti-cosmological constant (Anti Λ), the other of the cosmological constant Λ, the complementary of the cosmological constant Λ, the opposite of the cosmological constant Λ, and vice versa, represents in the same respect something like a "matter field" and a "geometrical field" too. Fortunately, (Anti Λ) and (Λ) can be calculated in detail. From (11) we obtain

$$R = +4 \times \Lambda - \left(\frac{4 \times 2 \times \pi \times \gamma}{c \times c \times c \times c}\right) \times T_{ae} \times g^{ae} \tag{28}$$

or

$$\Lambda = \frac{R}{4} + \left(\frac{1}{4} \times \frac{4 \times 2 \times \pi \times \gamma}{c \times c \times c \times c}\right) \times T_{ae} \times g^{ae}. \tag{29}$$

The anti-cosmological constant (Anti Λ), follows straightforward as

$$\begin{aligned}(Anti\ \Lambda) = R - \Lambda = R - (\frac{R}{4} + \left(\frac{1}{4} \times \frac{4 \times 2 \times \pi \times \gamma}{c \times c \times c \times c}\right) \times T_{ae} \times g^{ae}) \\ = \frac{3 \times R}{4} - \left(\frac{1}{4} \times \frac{4 \times 2 \times \pi \times \gamma}{c \times c \times c \times c}\right) \times T_{ae} \times g^{ae}.\end{aligned} \tag{30}$$

Let us take the opportunity here to illustrate another strategic aspect of this paper. This publication is grounded on the combination of the description of matter due to quantum mechanics and general relativity theory backgrounded geometric description of (space-) time. Before we discuss this topic in more detail, let us consider the following situation. Suppose that Λ and (Anti Λ) denote the segments on the hypotenuse *R* in a right triangle. Due to Euclid's (ca. 360-280 BC) so called *right triangle altitude theorem* or the geometric mean theorem or *Euclid's theorem*, published in a corollary to proposition 8 in Book VI of his Elements and used in proposition 14 of Book II to square a rectangle, define

$$\Delta^2 \equiv (Anti\ \Lambda) \times \Lambda \tag{31}$$

where Δ denotes the altitude in a right triangle (*the inner contradiction* between Λ and (Anti Λ). Consequently, multiply (27) by the Ricci-scalar *R*. Hence, it is

$$+(R \times R) = +((Anti\ \Lambda) \times R) + (\Lambda \times R). \tag{32}$$

Accordingly, due to Euclid's theorem, it is equally

$$a^2 \equiv \Lambda \times R \tag{33}$$

And

$$b^2 \equiv (Anti\ \Lambda) \times R \tag{34}$$

Thus far, due to the *Pythagorean* (ca. 570 BC-ca. 495 BC) *theorem,* the geometrical background of the special theory of relativity, and due to (32), (33) and (34) we obtain

$$a^2 + b^2 = R^2 = C^2 \tag{35}$$

The relationship between the Pythagorean Theorem and the Ricci scalar R can be demonstrated using i. e. the following isosceles right triangle (a triangle which has two sides of equal length).

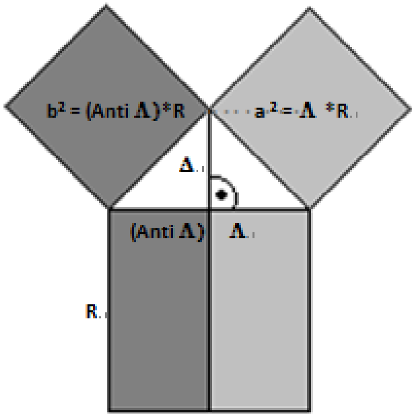

Fig. 1. The Pythagorean theorem and the Ricci scalar *R*.

The probability theory consistent form of (35) follows as

$$\frac{a^2}{R^2} + \frac{b^2}{R^2} = \frac{R^2}{R^2} = 1. \tag{36}$$

Thus far, multiply (36) by the wave function Ψ. We obtain

$$\frac{a^2}{R^2} \times \Psi + \frac{b^2}{R^2} \times \Psi = \Psi. \tag{37}$$

Rearranging (37), Λ passes over into (Anti Λ) or Λ is determined by (Anti Λ) and vice versa according to the equation

$$|a| \times \psi = |R| \times \sqrt[2]{1 - \frac{b^2}{R^2}} \times \psi = |R| \times \sqrt[2]{1 - \frac{(Anti\ \Lambda) \times R}{R^2}} \times \psi = |R| \times \sqrt[2]{1 - \frac{(Anti\ \Lambda)}{R}} \times \psi \tag{38}$$

In general, any operation on a wave function yields a new wave function. Unless otherwise noted, let us define

$$\Psi_1 \equiv \frac{a}{R^2} \times \Psi \tag{39}$$

and

$$\Psi_2 \equiv \frac{b}{R^2} \times \Psi \tag{40}$$

The principle of quantum superposition follows as

$$a \times \Psi_1 + b \times \Psi_2 = \Psi. \tag{41}$$

In particular, it is simple to calculate that

$$\Delta = \frac{a \times b}{R} \tag{42}$$

We shall shortly point out the delicate theoretical issues that arise when one considers the meaning of (27). It is worth while, in this context, to recall that the Ricci scalar *R* (something like an indicator of how a manifold curves locally) is the simplest measure of *the 'inner' properties* (curvature) *of space*. To each point on a manifold, the Ricci scalar R assigns a number determined by the intrinsic geometry of such a manifold. In the present context, due to

$$+R = +\left(Anti\ \Lambda\right) + \Lambda \tag{43}$$

Each point of a manifold is determined by (Anti Λ) and Λ. In last consequence, a major change in our physical world-view appears to be necessary. Rearranging (43) we obtain

$$\left(\frac{\left(Anti\ \Lambda\right)}{R}\right) + \left(\frac{\Lambda}{R}\right) = +1. \tag{44}$$

Multiplying (44) by the Schrödinger equation, we obtain

$$\left(\left(\frac{i \times \hbar \times \left(Anti\ \Lambda\right)}{R}\right) \times \frac{\partial}{\partial t}\Psi\right) + \left(\left(\frac{i \times \hbar \times \Lambda}{R}\right) \times \frac{\partial}{\partial t}\Psi\right) = i \times \hbar \times \frac{\partial}{\partial t}\Psi \tag{45}$$

where i is the imaginary unit, Ψ is the wave function, and $\hbar$ is the reduced Planck's constant. The present paper makes pretensions about aiming us in the direction in uniting (general) relativity theory with quantum mechanics.

In particular, there is a point of subtlety which needs to be addressed in more detail too. We take note of the fact that there may exist circumstances, where

$$\left(Anti\ \Lambda\right) = \Lambda \tag{46}$$

or where

$$\left(Anti\ \Lambda\right) > \Lambda \tag{47}$$

or where

$$\left(Anti\ \Lambda\right) < \Lambda. \tag{48}$$

Adding the cosmological constant Λ to (46) we obtain

$$\left(Anti\ \Lambda\right) + \Lambda = \Lambda + \Lambda. \tag{49}$$

Under these circumstances, due to (27), it is equally

$$R = 2 \times \Lambda \tag{50}$$

In any case, subtracting 2 × Λ from (50) it follows that

$$R - 2 \times \Lambda = 0 \tag{51}$$

Dividing (51) by 2, we obtain

$$\frac{R}{2} - \Lambda = 0 \tag{52}$$

Multiplying (52) by the metric tensor g_{ae} it is

$$\frac{R}{2} \times g_{ae} - \Lambda \times g_{ae} = 0 \times g_{ae} \tag{53}$$

Accordingly, under conditions of (46), another relationship is inescapable too. A square operation of (52) leads to

$$\left(\frac{R}{2} - \Lambda\right) \times \left(\frac{R}{2} - \Lambda\right) = \frac{R^2}{4} - \left(R \times \Lambda\right) + \left(\Lambda \times \Lambda\right) = 0^2 \tag{54}$$

In other words, (54) can be rewritten as

$$\frac{R^2}{4} = \left(R \times \Lambda\right) - \left(\Lambda \times \Lambda\right) = \Lambda \times \left(R - \Lambda\right) = \Lambda \times \left(Anti\ \Lambda\right) \tag{55}$$

In general, dividing (55) by R^2, we obtain

$$\frac{\left(R \times \Lambda\right) - \left(\Lambda \times \Lambda\right)}{R^2} = \frac{\Lambda \times \left(R - \Lambda\right)}{R^2} = \frac{\Lambda \times \left(Anti\ \Lambda\right)}{R^2} = \frac{1}{4} \tag{56}$$

or due to Einstein (4) it is

$$4 = \frac{R^2}{(R \times \Lambda) - (\Lambda \times \Lambda)} = \frac{R^2}{\Lambda \times (R - \Lambda)} = \frac{R^2}{\Lambda \times (Anti\ \Lambda)} = g_{ae} \times g^{ae} \tag{57}$$

In general, assume that $p(\Lambda=R)=\Lambda/R$. The variance $\sigma(\Lambda)^2$ of the *Bernoulli distributed* cosmological constant Λfollows as

$$\sigma(\Lambda)^2 = \left(\frac{(Anti\ \Lambda)}{R}\right) \times \left(\frac{\Lambda}{R}\right) = p(\Lambda = R) \times (1 - p(\Lambda = R)) \tag{58}$$

which is equally the variance of the isosceles right triangle above too. Under these conditions it is easy to calculate that

$$\sigma(\Lambda)^2 = \sigma(\Lambda) \times \sigma(Anti\ \Lambda) = \left(\frac{(Anti\ \Lambda)}{R}\right) \times \left(\frac{\Lambda}{R}\right) \le \frac{1}{4} \tag{59}$$

which has nothing in common with Heisenberg's uncertainty principle. In general, multiplying (27) by g_{ae}, the metric tensor, we obtain

$$R \times g_{ae} = (Anti\ \Lambda) \times g_{ae} + \Lambda \times g_{ae} \tag{60}$$

At this point, another complication appears to arise. There are circumstances where the Ricci scalar R is equal 0. Due to (60), this appears to be *the state of pure symmetry*, a state where a positive is equivalent to a negative and vice versa, i. e. a state where

$$-\Lambda \times g_{ae} = +(Anti\ \Lambda) \times g_{ae} \tag{61}$$

Thus far, objective reality, independent of human mind and consciousness and of any kind of a complete or incomplete (physical) theory, is the natural background for any theory. Under some certain circumstances (*Einstein's condition of completeness*) a theory can be regarded as being complete. A theory must not include all the possible elements of nature for being complete. But if a theory is dealing about the very basic and most important elements of nature, the same very basic elements of nature should be part of such a theory, as long as the same is regarded as being complete. Thus far, according to Einstein himself,

"*Whatever the meaning assigned to the term complete, the following requirement for a complete theory seems to be a necessary one: every element of the physical reality must have a counterpart in the physical theory*." [10]

As previously remarked, a complete description of objective reality requires indeed a cosmological constant Λbut equally an anti-cosmological constant (Anti Λ) too (27). Thus far and contrary to expectation, Einstein's general relativity theory is missing (Anti Λ), the other, the complementary (27), the opposite, the counterpart of Einstein's cosmological constant Λ. Consequently, we are forced to conclude, according to Einstein's own understanding of a complete physical theory, that **the description of objective reality as given by Einstein's general relativity theory is not complete**. Thus far, according to Einstein's own words, Einstein's general relativity theory is refuted.

5. Conclusion

From a purely theoretical and logical point of view, Einstein's general relativity theory is refuted. In principle, a completely new [11] (mathematical) point of departure for achieving a geometrically represented objective reality, a geometrical field theory of all fundamental interactions, the unified field theory, in a logically consistent manner, appears to be necessary.

References

[1] Einstein, A. (1916). Die Grundlage der allgemeinen relativitätstheorie. *Annalen der Physik, 49(7),* 769-822.

[2] Einstein, A. (1917). Kosmologische betrachtungenzurallgemeinen relativitätstheorie. *Sitzungsberichte der KöniglichPreußischen Akademie der Wissenschaften, 6,* 142-152.

[3] Hubble, E. (1929). A relation between distance and radial velocity among extra-galactic nebulae. *Proceedings of the National Academy of Sciences of the United States of America,* vol. 15, (pp. 168-173).

[4] Gamow, G. (1970). *My World Line - Informal Autobiography.* New York: Viking Press, p. 44.

[5] Einstein, A. (1918). Prinzipielleszurallgemeinen relativitätstheorie. *Annalen der Physik, 55(4),* 241-244.

[6] Einstein, A. (1950). On the generalized theory of gravitation. *Scientific American,* 182*(4),* 13-17.

[7] Einstein, A. (1915). Die feldgleichungen der gravitation. *Sitzungsberichte der Königlich Preußischen Akademie der Wissenschaften, 48,* 844-847.

[8] Einstein, A. (1916). Die grundlage der allgemeinen relativitätstheorie. *Annalen der Physik, 49(7),* 796.

[9] Einstein, A. (1918). Prinzipielleszurallgemeinen relativitätstheorie. *Annalen der Physik, 55(4),* 241-242.

[10] Einstein, A., Podolsky, B., & Rosen, N. (1935). Can quantum-mechanical description of physical reality be considered complete? *Physical Review, 47,* 777-780.

[11] Einstein, A. (1950). On the generalized theory of gravitation. *Scientific American, 182(4),* 16.

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Thus far, among his publications in physics, they are the refutation of Heisenberg's uncertainty principle ("Anti Heisenberg - Refutation of Heisenberg's uncertainty relation," American Institute of Physics - Conference Proceedings, volume 1327, pp. 322-325, 2011), the refutation of Bell's theorem and the CHSH inequality ("Anti-bell - Refutation of bell's theorem," American Institute of Physics - Conference Proceedings, volume 1508, pp. 354-358, 2012). In another public, "The equivalence of time and gravitational field," Physics Procedia, volume 22, pp. 56-62, 2011).