Duonistic Neutrinos Violate Relativity.

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Abstract.

Neutrinos-faster-than-light? The science-battle is not yet over! 'Yes', said the OPERA-team in September 22 2011. 'No', said the ICARUS-team in February 23 2012. But this paper carries on that it is undoubtedly correct that neutrinos can go faster-than-light. Neutrinos can only do that in neutrino-pairs: I call these pairs Duonistic Neutrinos! This paper presents the set of equations to prove that. The smallest gravity-acceleration g' appears to be prior to the trajectory of single packaged neutrinos. OPERA and ICARUS might be right both in the end.

Introduction.

In the period from September 2011 to March 2012 several press-releases broadcasted confusing information about whether neutrinos would be able to permit violation of Relativity. In short statements: September 23 2011: OEPRA said "yes-faster". September 23 2011: "Faster" worries scientists. November 18 2011: Again "faster". November 22 2011: More scientists doubt about "faster", also from a personal competitive psychology. February 23 2012: ICARUS said "not-faster". The claim: Neutrinos still fit the established Relativity, although ICARUS used a different system-configuration. The period is marked as: Rivaling projects focused on failures of GPS-and atomic clock synchronizations and an optical-fiber connection. However, a few sharp criticasters noticed ICARUS used a different system-configuration, which possibly might be eliminating a not understood effect, such as the faster-than-light-neutrinos. Some insiders also noticed an unhealthy human power-competition, walking through the science-scene. The science-battle became to a climax with the resignation of Antionio Ereditato (head of the OPERA-project). I was shocked (he had a tremendous reputation). So many scientists had worked on the OPERA-data gathered in 2009, 2010 and 2011 and declared their approval to the report: Neutrino-anomaly. But I think he and some of his team-members, are still right. My set of equations point to that. I feel sorry for those who took personal advantage from this convoluted science-situation. I think the OPERA is still right, because my theory and equations show how Duonistic Neutrinos can be formed and violate Relativity. I think, as often has happened with science-discoveries, accidentally a new phenomenon is revealed unnoticeable. Accidentally here means: The assumed synchronization-failures could be of ultimate importance to cause a convergence of neutrinos in their flight-path to enable them to form pairs. I show that in my set of equations. My sharper formulated equations are a follow-up from two of my former papers on this subject. However, this new paper also reveals a better understanding of dark matter. Dark matter acts like a tiny 'spinning-space-disc'. In accelerated conditions it causes a dark matter force. This in-sight makes it easier to understand why it's so difficult to detect dark matter. A more intelligent conclusion is: Dark matter is directly related to dark energy in terms of gravity is not fundamental. This point of view is also shared by the publication of Erik Verlinde [1]. He embedded his ideas in String-theory, but I didn't! Still my set of equations also show: Gravity is not fundamental. The use of dark energy in my new framework of cosmology (by $t^{1/3}$ and $t^{2/3}$ from below the Planck-scale) also appears to be a practical tool to show Duonistic Neutrinos could violate Relativity. The

time-gain of neutrino-pairs could be 62.8 nanoseconds, compared to light-travel , and is within the margins of the 60 nanoseconds mentioned in the first CERN-press-release. But, as now appears in this paper, this time-gain could depend on the strength of the smallest gravity-acceleration between adjacent neutrinos. The equations in my former papers [2];number14,15could need some modification without an effect on these results. This paper here, however, refines the set of equations and give further proof for violation Relativity. Nevertheless I intend to modify my former papers to a version 2 after having published this paper about the Duonistic Neutrinos.

Set of equations that lead to Duonistic Neutrinos.

PART 1:

$$F_{de} = \pm k_{de} m^3 \left[(kgm)^3 \frac{N}{s} \right]$$

$$F_{de} = darkenergy - force - formula$$

$$k_{de} = \frac{c^5 O_e}{2G} \left[J \frac{m^2}{s} \right] \equiv \left[\left(kg \frac{m^3}{s} \right) \frac{m}{s^2} \right]$$

$$k_{de} = accelerated - mass - volume - flow$$

$$c = lightspeed$$

$$O_e = (Plancklength)^2$$

$$G = gravitational - Newton - const.$$

$$m^3 = m_{vm}.m_{dm}$$

$$index - vm = visible - mass$$

$$index - dm = dark - matter - mass$$

$$k_{de} \left[\frac{\left(kg \frac{m^3}{s} \right) \frac{m}{s^2}}{\left(kg \frac{m^3}{s} \right)} \right] \equiv \left[\frac{m}{s^2} \right] .m_{vm} [kg] . (m_{dm})^2 \left[kg^2 \right]$$

$$F_{de} = k_{de} m_{vm} [N] . (\pm m_{dm})^2 \left[kg^2 \right]$$

$$with$$

$$g = k_{de}$$

$$F_{de} = mg [N] . (\pm m_{dm})^2 \left[kg^2 \right]$$

$$F_{de} \equiv F_G [N] . (\pm m_{dm})^2 \left[kg^2 \right]$$

$$F_{de} = \langle gravity - force \rangle \otimes \langle darkmatter \rangle = \langle darkenergy - force \rangle$$

$$F_G = mg = G \frac{Mm}{R^2} [N]$$

The first meaning of this part is to make clear a new dark energy force is universal and gravity-force is not fundamental. The second meaning is I need this part to rewrite towards a set of equations with the Newton's constant G at the surface of a new geometry: A Double Torus.

PART 2:

I start with rewriting the dimensional form:

$$F_{de} = \pm \frac{c^5 O_e}{2G} m^3 \left[(kgm)^3 \frac{N}{s} \right] \Rightarrow F_{de} = \pm \frac{c^5 O_e}{2} m^3 \left[\frac{1}{G} (kgm)^3 \frac{N}{s} \right]$$

$$\left[\frac{1}{G} (kgm)^3 \frac{N}{s} \right] = \left[\left(\frac{1}{G} kg \right) .kg.kg.m^3 \frac{N}{s} \right] = \left[\frac{m^3}{s^2} .kg.kg.m^3 \frac{N}{s} \right] = \left[m^3 . \left(kg \frac{m}{s^2} \right) .kg.m^2 \frac{N}{s} \right] =$$

$$\left[m^3 .N. \left(kg \frac{1}{s} \right) m^2 N \right] = \left[m^3 \left(\frac{1}{G} kg \right) \frac{1}{s} \langle Gm^2 \rangle N^2 \right] = \left[m^3 . \frac{m^3}{s^2} \frac{1}{s} \langle Gm^2 \rangle N^2 \right] = \left[\frac{m^3 \langle Gm^2 \rangle m^3}{s^3} N^2 \right]$$

From this follows:

$$F_{de} = \pm \frac{c^5 O_e}{2G} m^3 \left[(kgm)^3 \frac{N}{s} \right] \Rightarrow F_{de} = \frac{c^5 O_e}{2} m^3 \left[\frac{m^3 \langle Gm^2 \rangle m^3}{s^3} N^2 \right]$$

G is now expressed as a dimensional surface, like also mass is expressed as space and force. The directions of the force (the '+' and '-' signs) is expressed inclusive as [N^2].

As mentioned in part 1 the dark energy force (gravity-force x dark-matter) belongs in a new geometry. So, what I say is: "The established Holographic Principle is not limited to a surface enclosing a space-volume, but should be extended to a surface related to the Double torus space-volume. General mathematical equations has already described this in 2009, as follows:

$\int (\alpha x^2+\beta x+\gamma)\, dx = k,\ k \in R,$

$\int (0)dx = k,\ k \in R$

$\int (\alpha x^2+\beta x+\gamma)\, dx = \int 0\, dx$

$\alpha x^2+\beta x+\gamma=0,$

$\alpha=G,\ \beta=0,\ \gamma=-¼\ c^4\ (\text{h-bar})^2\ m^6\ G$

$x=\pm ½\ c^5\ m^3\ G^{-1}\ (L_{planck})^2$

the x is my original dark energy force formule..

The general expression (13) can also be written as:

$\int (\alpha(F_{de})^2 + \gamma)\, dx = k,\ \ k \in R$

$\alpha = G\ (\approx 6.67 \times 10^{-11}\ N\ m^2\ kg^{-2})$

$\gamma = -¼\ c^4\ (\text{h-bar})^2\ G\ M^6\ \ (\approx 10^{-61}\ M^6)$

For $\{\alpha(F_{de})^2 +\gamma=0\}$ follows $F_{de} = \pm ½\ c^5\ M^3\ G^{-1}\ (L_{planck})^2$

Notice how my original dark energy formula from my thought-experiment in 2004 emerge from this mathematics.

The mathematical equations were described by **Christopher Forbes** and his colleague Keith Lees. Both UK scientists assigned me to their publications http://vixra.org/abs/0909.0005 and http://vixra.org/abs/0910.0016.

The Y is the amount of dark energy and is dimensionally a Double Torus http://vixra.org/abs/1101.0096.

The Double Torus Universe exists of an outer torus of dark energy torus embedding and intertwining an inner dark matter torus. Visible mass is just effect of interactions in the dark.

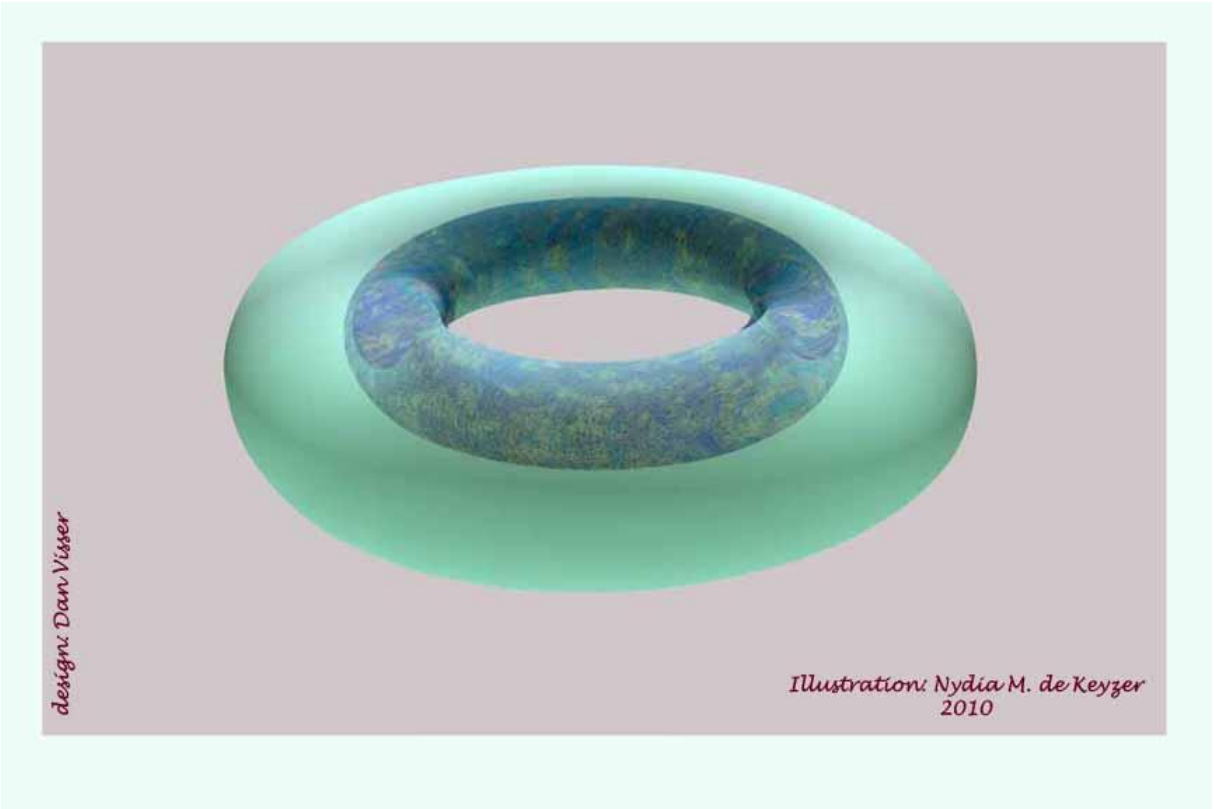


Fig.1: Double Torus Universe (Dan Visser, Almere, the Netherlands), wherein a new dark energy force is the pillar in a set of equations that explains why Einstein's Relativity can be violated by neutrino-pairs, called Duonistic Neutrinos, without abandoning Relativity.

The continuation in Part 2 is a step just as made in Part 1: A split-up in gravity-force x dark matter.

$$F_{de} = k'_{de} m^3 \left[\frac{m^3 \langle G m^2 \rangle m^3}{s^3} N^2 \right]$$

$$k'_{de} = \frac{c^5 O_e}{2} \left[\frac{m^7}{s^5} \right] \equiv \left[\left(\frac{m}{s^2} \right)^2 \frac{m^5}{s} \right]$$

Just as in Part 1 a split-up in m_{vm} (visible mass) and m_{dm} (dark matter mass) is justified, in order to get gravity-force x dark matter.

$$F_{de} = k'_{de} m_{vm} m^2{}_{dm} \left[\frac{m^3 \langle G m^2 \rangle m^3}{s^3} N^2 \right]$$

From this follows:

$$F_{de} = \pm \left\{ \left(k'_{de} \right)^{\frac{1}{2}} \left[\frac{m}{s^2} \right] . m_{vm} \left[kg \equiv \frac{G m^3}{s^2} \right] \right\} . \left\{ \left(k'_{de} \right)^{\frac{1}{2}} \left[\frac{m}{s^2} \right] m^2{}_{dm} \left[\frac{m^5}{s} \right] \right\}$$

$$m^2{}_{dm} = \left[m^2 m^2 \frac{m}{s} \right] \equiv \left[spinning - space - disc \right]$$

From this follows:

$$F_{de} \equiv F_G \left[N \right] \otimes \langle accelerated - spinning - space - disc \rangle$$

$$F_{de} \equiv F_G \left[N \right] \otimes \pm F_{dark-matter} \left[\frac{m^6}{s^3} \right] \equiv \left[\left(\frac{m^2}{s} \right)^3 \right]$$

$$F_{de} \equiv F_G \left[N \right] \otimes \pm \langle the - spacial - \ flow - of \ - a - dark - matter - surface \rangle$$

The result is robust! It is telling the Newton gravity-force and the dark matter force cause (in two opposite directions) a force to hold together galaxies like a spinning space disc (turning left- or right).

However, the same logic could be applied on small particles, such as neutrinos. Hence that produce a smallest gravity-force and a smallest dark matter-force.

PART3:

The result of part 2 was:

$$F_{de} = \pm \left\{ \left(k'_{de} \right)^{\frac{1}{2}} \left[\frac{m}{s^2} \right] . m_{vm} \left[kg \equiv \frac{G m^3}{s^2} \right] \right\} . \left\{ \left(k'_{de} \right)^{\frac{1}{2}} \left[\frac{m}{s^2} \right] m^2{}_{dm} \left[\frac{m^5}{s} \right] \right\}$$

For the smallest particles follows:

$$F_{de} = \left(\downarrow \lim F_G \left[N \right] \right) . \left(\downarrow \lim F_{dm} \left[\left(\frac{m^2}{s} \right)^3 \right] \right)$$

If this dark energy force is only the smallest gravity-force, than the equation is:

$$km^3 = mg$$

$$k = \left(k^{'}_{de}\right)^{\frac{1}{2}}\left[\frac{m}{s^2}\right]$$

$$km_{vm}\left(m_{dm}\right)^2 = m_{vm}g$$

$$\frac{km_{vm}\left(m_{dm}\right)^2}{m_{vm}} = \frac{m_{vm}g}{m_{vm}}$$

$$k\left(m_{dm}\right)^2 = g$$

$$\frac{k}{g}\left(m_{dm}\right)^2 = 1$$

For

$$\left(m_{dm} = \pm 1\right) \Rightarrow \left(\frac{k}{g} = 1\right)$$

From this follows:

$$100\frac{k}{g} = 100$$

This is congruent to 100% existence for $100\frac{k}{g}$ and is dimensionless, because k and g are dimensionally expressed in[m/s^2].

In order to relate to neutrinos I use an **experimental detected** smallest acceleration of Newton-force[3] :

$$\langle g = 5.10^{-14}\left[\frac{m}{s^2}\right]\rangle \Rightarrow g^{'}$$

From this follows:

$$100.\frac{k}{g^{'}} = 100.\frac{k^{'\frac{1}{2}}_{de}}{g^{'}} = 100.\frac{\left(\frac{1}{2}c^5.O_e\right)^{\frac{1}{2}}}{g^{'}} = 100.\frac{\left(\frac{1}{2}3^5\left(10^8\right)^5(2.6).10^{-70}\right)^{\frac{1}{2}}}{(5).10^{-14}} = 35.547 \qquad (9)$$

PART 4:

In this part the set of equations for the faster-than-light-neutrinos is given.

The momentum produced by the dark energy force is:

$$F_{de}.t^{\frac{2}{3}}$$

$t^{2/3}$ is dark energy time.

The complete time('t') in a higher order framework of the Double Torus geometry is given by:

$$'t' = t^{\frac{1}{3}}.t^{\frac{2}{3}}\left[s^3\right]$$

$t^{1/3}$ is dark matter time.

Both are two extra time directions from below the Planck scale additional to the one time-direction (t,) representing entropy in Big Bang Cosmology.

A simplified handwritten note explains:

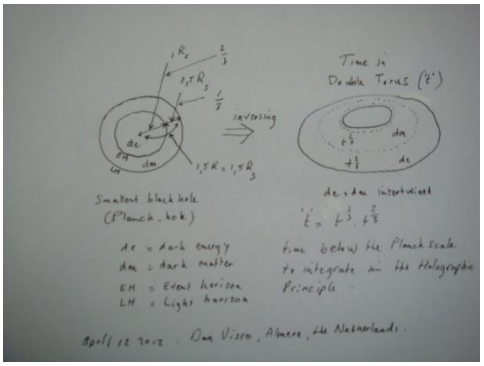


Fig. 2: A Double Torus geometry fundamentally follows from equations in publications[2].

Taking this in mind, the conventional momentum F_G .t = m .v could be dominated by the momentum of (F_{de} .$t^{2/3}$) as used in a Double Torus Cosmology and cause a speed-increment Δv for neutrinos. I will not say what the result will be, but let speak the next set of equations.

The new dark energy momentum causes a speed increment as follows:

$$F_{de}.t^{\frac{2}{3}} = m.\Delta v$$

$$k.m^3.t^{\frac{2}{3}} = m.\Delta v$$

Wherein $k = \left(k'_{de}\right)^{\frac{1}{2}}\left[\frac{m}{s^2}\right]$

Again a split-up of visible and dark matter mass is made.

$$km_{vm}\left(m_{dm}\right)^2.t^{\frac{2}{3}} = m_{vm}\Delta v$$

$$\frac{km_{vm}\left(m_{dm}\right)^2.t^{\frac{2}{3}}}{m_{vm}} = \frac{m_{vm}\Delta v}{m_{vm}}$$

$$k.\left(m_{dm}\right)^2.t^{\frac{2}{3}} = \Delta v$$

$$\frac{k}{g'}.\left(m_{dm}\right)^2.t^{\frac{2}{3}} = \frac{\Delta v}{g'} = \Delta t$$

$$\frac{\Delta t}{\frac{k}{g'}.\left(m_{dm}\right)^2} = t^{\frac{2}{3}}$$

As stated before, for

$$\left(m_{dm} = \pm 1\right) \Rightarrow \left(\frac{k}{g} = 1\right)$$

From this follows:

$$\Delta t = t^{\frac{2}{3}}$$

Where Δt is the time-gain of the neutrinos compared to the light-travel (in vacuum).

From this follows:

$$\frac{\Delta t}{100.\frac{k}{g'}} = \frac{t^{\frac{2}{3}}}{100.\frac{k}{g'}} = \frac{t^{\frac{2}{3}}}{35.547}$$

Wherein the substitution of a light-second of t = 299792458 [m] in $t^{2/3}$ is demanded to have the comparison to light-travel.

One meter light-travel happens in t = 1/299792458 second = 3.335641 x 10^{-9} second.

From this follows the time-gain for neutrinos:

$$\frac{\Delta t}{100.\frac{k}{g'}} = \frac{(3.335641)^{\frac{2}{3}}.(10^{-9})^{\frac{2}{3}}}{35.547}\sec = 62.8 nano \sec \qquad (16)$$

Eventually this **62.8 nanosecond** fits into the result of the CERN-San Grasso experiment released in September 22 2011 of approximately 60 nanosecond; to be precisely ((60.7 ± 6.9 (stat.) ± 7.4 (sys.)).

k is a constant in the equations , but the smallest gravity-acceleration g' could vary.

Neutrinos normally don't feel the gravity of large objects and pass easily through large mass-densities', but two neutrinos could move closer to each other (convergence) during a trajectory-travel and thus can feel a stronger smallest gravity-acceleration g' relative to each other.

A larger g' will decrease the value of $100.\frac{k}{g'}$. Hence an increase of the value $\frac{t^{\frac{2}{3}}}{100.\frac{k}{g'}}$ happens and lead to extra fast neutrinos-pairs.

On the contrary g' could also be little smaller than the applied smallest gravity-acceleration. This could generate a smaller time-gain (60 nanosecond) or less.

Conclusion.

$$Neutrino-Violation-\mathrm{Re}lativity=\frac{\Delta t}{100.\frac{k}{g'}}$$

$$k=\left(k'_{de}\right)^{\frac{1}{2}}\left[\frac{m}{s^2}\right]$$

$$k'_{de}=\frac{c^5O_e}{2}\left[\frac{m^7}{s^5}\right]\equiv\left[\left(\frac{m}{s^2}\right)^2\frac{m^5}{s}\right]$$

k'_{de} is the constant in a universal dark energy force (part of a new cosmological geometry).

The dark energy force generates gravity-force and dark matter-force.
Thus Gravity-force is not fundamental.

The smallest Newton gravity-acceleration g' can vary and cause violation of Relativity by neutrino-pairs for larger g's. Thus convergence of single neutrinos can form pairs, which I call Duonistic neutrinos. Those can violate Einstein's Relativity. Single neutrinos will obey Einstein's Relativity. One can make an analogy with electron (Cooper) pairs, which do not feel the electrical resistance in superconductivity. In a different sort of way Duonistic Neutrinos don't feel the obstruction of General Relativity. The convergence of neutrinos that travel in packages in the held experiments can make them accessible for a larger g' among each other. From the equations follow: The trajectory is not the main issue. Convergence is the issue. That must be experimented! Accidentally this might be introduced. Now it has to be introduced controlled! Then the news could be: A new cosmology has been born! Neutrino-pairs can go faster-than-light and violate Einstein's Relativity, but Relativity remains, because Single neutrinos obey Relativity. Both OPERA and ICARUS could be right![4]

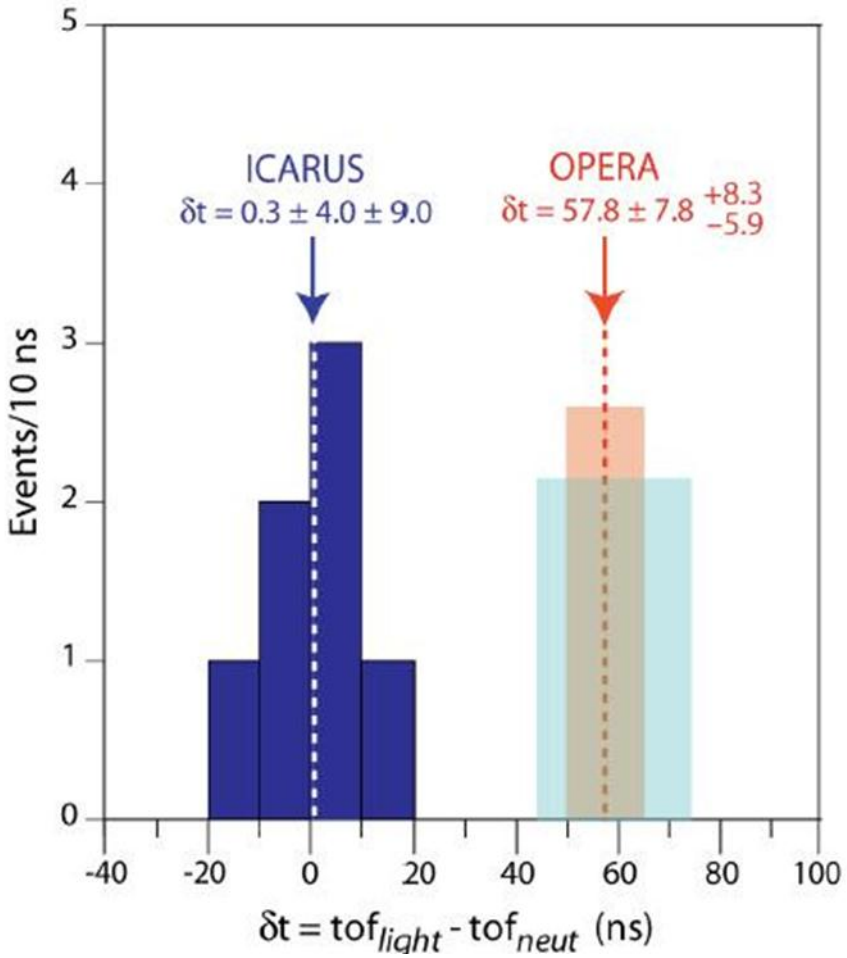
References.

[1] On the origin of gravity and the laws of Newton; doi:10.1007/JHEP04(2011)029

[2] http://vixra.org/author/dan_visser

[3] *Phys. Rev. Lett.* **98** 150801 (2007); Laboratory test of Newton's second Law For small Accelerations.

[4] Graphic from ICARUS report.



Comment: ICARUS and OPERA had different system configurations! Just accidentally, it might be as with several other science-discoveries in history: Synchronization-problems might have caused a new phenomenon . Thus controlled a-synchronization-experiments might inert faster-than light neutrinos.: That should be brought into practice, because the set of equations here in this paper show such is possible.