Einstein and gravitational waves

By Alfonso León Guillén Gómez

Independent scientific researcher

Bogotá Colombia

March 2021

aguillen@gmx.net

In memory of Blanquita Guillén Gómez

September 7, 1929 - March 21, 2021

Abstract

The author presents the history of gravitational waves according to Einstein, linking it to his biography and his time in order to understand it in his connection with the history of the Semites, the personality of Einstein in the handling of his conflict-generating circumstances in his relationships competition with his colleagues and in the formulation of the so-called general theory of relativity. We will fall back on the vicissitudes that Einstein experienced in the transition from his scientific work to normal science as a pillar of theoretical physics. We will deal with how Einstein introduced the relativistic ether, conferring an "odor of materiality" to his geometric explanation of gravity, where undoubtedly it does not fit, but that he had to give in to the pressure that was justified by his most renowned colleagues, led by Lorentz. Einstein had to do it to stay in the queue that would lead him to the Nobel. It was thus, as developing the relativistic ether thread, in June 1916, he introduced the gravitational waves of which, in an act of personal liberation and scientific honesty, when he could, in 1938, he demonstrated how they could not exist, within the scenario of his relativity, to immediately also put an end to the relativistic ether.

Introduction

Between December 1969 and February 1970, the author formulated the existence in nature of speeds greater than the speed of light in vacuum [0], when he had managed to make a conception about the scientific work of special relativity and general relativity of Albert Einstein, and found that the bridge between the two, that is, the strong principle of general equivalence of motion from which it follows that all kinds of motion such as inertial, accelerated and gravitational are relative to the effect of the coordinates of an observer and, even further, the equivalence in inertial motion between rest and motion allows sustaining its illusory character, which implied that Einstein had a subjectivist conception of the world. However, Einstein formulated the law of the maximum limit of the velocity c, which contradictorily breaks with the general equivalence of motion, since while in inertial systems said limit is a simple effect of coordinates, it is not so in accelerated motion where it is physical. The reason would be the supposed relativistic mass that increases directly proportional to the greatest changes in speed, tending to infinity at this limit. But, while apparently, the growth of the mass has been verified in the accelerators of particles, but not in the massive bodies, because according to their atomic structures, the constancy of the mass with the changes of speed is unmistakably verifiable as the atoms continue to maintain their identity. On the other hand, without a doubt, in all cases, the kinetic energy is really the increasing one and as energy it is debatable it possesses inertia, at least, in the sense of massive bodies.

Around 1990, I suggested to my friend, Tiberio Perea Asprilla, a physicist at the National University of Bogotá, during a walk, that although the interaction to which all material existence is subjected is a universal law, from which the inertia, physically it is not the same in mass as in energy. While mass constitutes the static aspect, energy is the dynamic aspect of material existence, but neither are absolute. The mass has inertia as a consequence of the action-reaction principle, on the other hand, the energy propagating in a vacuum must approach zero inertia, understanding the typical inertia of the energy as its braking in its interaction with the atomic structures due to the process of absorption-emission that I noticed does not operate in the same way for all forms of energy, that is, the let's say standard process of energy inertia is that of the photon-atom interaction. But, in the propagation of energy in a vacuum, the interaction could be between its real and virtual states (a process of annihilation-creation), giving rise to different braking rates in inverse proportion to the magnitude of the energy of its quanta, so there could be different speeds. In short, it does not matter that my vision may be speculative, it may still be, in I do not know what approximation number.

In 2001, physicists Dimitri Nanopoulos from "Theoretical Physics Division of the Academy of Athens", in Greece, Nikolaos Mavromatos from "King's College", in London, and John Ellis from "European Center for Particle Physics (CERN)", in Genoa, proposed for the speed of the electromagnetic wave its dependence on its frequency, that is, on its energy according to the relation to higher energy lower speed. Thus, in the electromagnetic spectrum, gamma rays, due to their very high energy, would be the slowest, which could be detected on their journey over implausible distances given in light years. The results are ambiguous, for example: on July 9, 2005, the MAGIC gamma radiation telescope, in the Canary Islands, recorded the peaks of F (<0.25 TeV) and F (> 1.2 TeV) of the same spectrum, emitted probably at the same time, by the blazar at the center of the Markarian galaxy 501 (Mrk 501), about 500 million light years from Earth; the gamma ray of F (> 1.2 TeV) arrived 4 +/- 1 minutes after the ray of F (<0.25 TeV) (Physics Letters B, vol 668,

p 253), which proves that the highest energy radiation travels at a lower speed than the lower energy radiation. This result was confirmed with the record made in September 2008, by the Fermi telescope in Earth orbit, from NASA's GLAST project, of the gamma radiation, the strongest and with the longest duration detected, coming from GRB 080916C, about 12 billion light years away, during the early Universe; the lower energy photons arrived earlier, with an increasing time difference with increasing energy of the higher energy photons, the maximum energy was 13GeV (www.arxiv.org/abs/0906.3731v2), according to the analysis carried out by the Italian physicist Giovanni Amelino-Camelia (Dipartimento di Fisica, Universita La Sapienza Roma, Italy) and the American physicist Lee Smolin (Perimeter Institute for Theoretical Physics, Caroline North, and Waterloo, Ontario, Canada). However, on May 10, 2009, Fermi recorded a short radiation, called GRB 090510, of gamma rays, from two peaks with different energies for a million times, the maximum energy was > 1GeV generated by the explosion occurred in the collision between, what astronomers believe, two neutron stars, in a galaxy approximately 7.3 billion light years from Earth, during the Universe dominated by large structures of matter; the two rays arrived with only a difference of exactly 9/10 of a second, the first peak to arrive was the one with the highest energy and then the one with the lowest energy, which made the scientists of the Fermi team assume that the two types of photons traveled at the same speed. Scientists Amelino-Camelia and Smolin do not find the second Fermi record significant due to its shortness while the first was abundant in radiation due to its long duration. The conclusion is that new records are still required, in addition to interpreting them including the possible predictive effects of alternative theories on gravity.

The author finds that the Fermi records are strongly affected by the expansion of the Universe, therefore by changes in the density of the vacuum energy, and probably changes in physical constants, the existence of which is denied in normal science. Such changes affect the MAGIC registry much less. Since the measurements have not included the possible effect of the change in the density of the quantum vacuum with the passage of eras of the evolution of the universe and that the photons would interact with the vacuum in two ways, that is, photon-vacuum and vacuum-photon, the author speculates that the Fermi records are significantly affected, because the photons with lower energy, coming from GRB080916C, would have traveled faster during a certain period, unknown, that followed the Big Bang, according to It follows from Einstein or if you want to the inversion of the contraction of the universe to its expansion according to Logunov, more precisely after the Planck era, during the early universe, which has not been periodized as it was, subsequently the photons of Higher-energy photons traveled faster than lower-energy photons, as a consequence of their interaction with the energy density of a vacuum, during the era of the domain of matter. But, higher-energy photons traveled slower than lower-energy photons within the last 500 million years of the era of dark energy dominance and perhaps, during the most recent period, coinciding with the continued decline in vacuum energy density, during the era of phantom energy dominance, which we may already be in. The result of the race is that the higher-energy photons arrived just 9/10 of a second before the lower-energy photons during the third record, while the lower-energy photons arrived clearly before the higher-energy photons during the second record.

According to a mathematical formula it is that energy has an equivalent in mass and vice versa. But, although it has been proven in the disintegration of particles, it has not been in the disintegration of the atom as was initially believed, since the immense production of energy that then occurs actually comes from the liberation of the energy of the packaging.

Definitely, that is to say, beyond any doubt, with acceleration it is the energy that increases and not the mass, as Einstein formulated, and it is not credible that kinetic energy, lacking in the first approximation of inertia in a vacuum, can make it impossible further speeds.

The author understood that the relativism of the movement and the absolutism of the speed of the photons of the electromagnetic wave for a non-Einstein who started from a different conception about the world, for example, the rationalist would instead formulate about the movement, in the first place, which is absolute and with respect to a maximum velocity he would relativize it to each form and state of existence of matter, therefore, the author introduced the hypothesis of the existence of subsequent velocities to c, of which one would be that of the propagation of gravity, insofar as this form of material existence precedes that of the electromagnetic field with its speed c. It is possible to order the differentiated forms qualitatively and quantitatively, as occurs between the bosonic and the fermionic forms, as well as the quantitatively differentiated states such as between plasma, gaseous, liquid, solid, fermionic condensate and Bose-Einstein condensate. Speed is one of the magnitudes in which they differ. From the most basic form of energy known, such as gravity, in the direction of the states of the fermionic form, the speed with which they propagate progressively slows down, reaching in the fundamental Bose-Einstein state that the atoms are standing still.

My 1969 hypothesis about the speed of gravity greater than that of light was developed by the world renowned American scientist, PHD, of Yale University, astronomer, celestial mechanic specialist and visionary Tom Van Flandern, who, in 1998 , measured based on astronomical observations the speed of propagation of the static gravitational field (virtual graviton) at least 20 billion times the speed of light, based on the kinetic theory of gravitation initially proposed in 1690, by the Swiss astronomer and mathematician Nicolas Fatio de Duillierdel and developed, in 1748, by the Swiss physicist and encyclopedist of the first French empire, Georges-Louis Le Sage. The author for his part was based on the popularization work "The cosmos and its seven states", in a 1967 edition, by physicists, from the former USSR, M. Vasiliev, and K. Staniukovich, who presented and expanded the theory on quantum gravity initially proposed, in that same year, 1967, by the Russian nuclear physicist Andréi Dmítrievich Sakharov.

Also, in 1998, Petar K. Anastasovski from the “New York University Skopje” in Macedonia, in his work "Superluminary Relativity Related to Nuclear Forces and Structures" found a better understanding of nuclear phenomena if velocities greater than c are allowed. On the other hand, Anastasovski solved the mathematical problem of the Lorentz transformation by reformulating it for $v > c$, with which c is conserved as a constant of nature, for all inertial observers, but not as a final velocity.

On the other hand, in experiments carried out since 1992, in Cologne, Germany, by the German physicist Günter Nimtz, very weak electromagnetic waves that propagate superluminally have been produced. Nimtz explains them as virtual photons. These are evanescent waves, because their wave number is an imaginary value and they are produced by the passage of microwaves through dielectric photon barriers.

In 1999, the American physicist William D. Walker, from the “Royal Institute of Technology, KTH-Visby, Department of Electrical Engineering, in Sweden, presented in his work“ Experimental Evidence of near-field superluminally propagating electromagnetic fields ”the result of the Experiments performed indicating electromagnetic fields travel with superluminal velocity in the

near field of an electromagnetic source of waves generated by electrical oscillations of a dipole. Walker found that the path of the transverse electrical component has an infinite velocity from the first third of the electromagnetic wave formation. This speed decreases progressively until c, very closed at the moment in which the first length of the electromagnetic wave ends, and remains constant thereafter. This result is consistent with the theoretical model for the propagation of the electric field and the magnetic field, in the near field of the electric oscillation of the dipole, which Walker obtained from the standard of the theory of electrodynamics. This result agrees with those obtained by Dr. Gunter Nimtz in his experiments with evanescent waves. In both cases, there is no phase change due to the fact that the first wavelength has not been completed in Walker's experiment and that in the evanescent wave this change does not exist either.

In 2011, 179 scientists, mainly from Europe and Asia, belonging to 48 scientific institutions in Germany, Belgium, North and South Korea, Croatia, the Russian Federation, France, Greece, Italy, Israel, Japan, Turkey and Switzerland, acting as of authors and on behalf of Opera, disclosed in the article "Measurement of the neutrino velocity with the OPERA detector in the CNGS beam "the result of their accidental discovery made, in the research laboratory "Gran Sasso", Italy, in the "Oscillation Project with Emulsion-tracking Apparatus "(OPERA), that the muon neutrino travels in a vacuum with a speed greater than c, by approximately .25 ten-thousandths, breaking this "sacred limit". Normal science, your protector, could you accept it? This result was obtained according to the relationship (muon neutrino velocity - c) / c = (2.37 ± 0.32 (statistical uncertainty) + (0.34, -0.24) (total systematic uncertainty)) x 10^{-5}. These scientists investigated experimentally, through the first direct test, the oscillation between neutrinos: muon and tau, which consists in the conversion of one into the other by change in their amount of mass, therefore, a phenomenon that only occurs in the particles with mass. However, in 2012, it was said that flaws were found in the experiment's infrastructure that made it necessary to repeat it. There were two such failures, according to an OPERA spokesperson other than the official one, which implied a leadership coup had occurred. The first was a faulty connection of a fiberglass cable to an optical signal converter unit to electronics, and the other fault was the absence of synchronization between the Gran Sasso clock with the OPERA master clock. By repeating it, the superluminal velocity of the neutrino was not confirmed, but rather put into dispute between rival groups. However, it is strange that the flaws had remained hidden during the long period in which the experiment was repeated before OPERA reported its finding, and the results obtained in 2008, 2009, 2010 and 2011 were consistent according to rigorous statistics tests to which they were subjected, when the failure of the supposedly semi-loose cable depends on its highly probable inclination and torsion that will vary with time. On the other hand, while it was expected that OPERA would repeat the experiment, once the corrections of the aforementioned failures had been made, it was ICARUS, OPERA's rival group that carried it out and it was the spokesperson for the CERN Research Directorate who said, in June of 2012, that really the speed of neutrinos is lower than c, previously the ICARUS spokesman said that the OPERA did not know how to do the experiment correctly. More worrisome is that a few weeks before, towards the end of March 2012, a group of 16 OPERA members representing 45 percent of the total, pressured its leader, Dr. Antonio Ereditato and the person responsible for the measurements, doctor, Dario Autiero and forced them to resign from their positions, after a vote in which they obtained 13 votes in favor and several abstentions, despite the statutory requirement of two-thirds against. Officially, OPERA announced that it is abandoning experiments on the velocity of neutrinos, although they continue to study the mechanism of the oscillation between the muon neutrino and the tau

neutrino. The author, as a participant in the forum of the article “Neutrinos Still Breaking Speed Limits” by Jason Major, published on November 18, 2011 by “Universe Today” stated: “The speed of neutrinos, greater than c, allows them to escape from black holes. Since neutrinos have mass according to the fourth moment, it is false that particles with mass cannot travel above c. Also, that the speed of the particles depends on the kind of interaction since in terms of energy neutrinos are similar to high energy photons, but neutrinos do not have electromagnetic interaction. Thus, the speed of the particles does not only depend on their inertia (thesis of the author in his work Velocities greater than c). The classes of interactions of the particles must also be included in the model to explain their speed”.

Even more conclusive, is the superluminal quantum entanglement existing between particles, exhaustively verified and that, when incorporated technologically, as there are several projects in progress, it will be established that there is transmission of information, the last refuge of the deniers about its existence.

Doctors Ereditato and Autiero, although with less rigor are added to doctors Tom Van Flandern and Paul Marmet, within the notable cases, who, because of their discrepancies with Einstein's Relativity, or rather, against normal science, were relentlessly persecuted.

At the end of the day, for what we propose, it does not matter if the author's alternative hypothesis is the one that we should stay with, the truly transcendental thing is to emphasize, firstly, that the valid one for normal science presents contradiction and, secondly, although the alternative is speculative, in any case, it could become scientific. That is, the transcendental difference between different hypotheses is between the hypotheses that belong to normal science and the hypotheses that are outside it.

On the other hand, on the basis of this possible conceptual change, the author found that it originated from the different ways of explaining the world of different men in different places or times, then it should be taken into account in the evaluation of a theory that they are in definitive products of men's thought, thus corresponding to models whose referent is the world itself, men with a concrete existence, which leads to the vision of the scientific process, framing it in the cultural-ideological-psychological structures of the human being as an individual, but also in the social and historical structures since the human being is first of all a social and historical being and, in addition, a political animal in its relationship with the States of a determined economic-social formation to which it belongs within the particularities of a nation. The result in terms of science is that normal science is overprotected, beyond its specificity, because it is part of the superstructure of a certain economic-social formation, therefore, overprotected politically, which, converted into action, it maintains its validity, let's say it briefly, by "burning" those who compromise it. Of course, the starting point of this thesis, used by the author, is simply an example, since in general we must refer to the history of science, through its different approaches of its most renowned thinkers to an objective scientific truth. in its unfolding in space and time and to the countless martyrs for having been dissenters from normal thought, of which normal science is finally a part.

Many colleagues will probably be upset by my approach that scientific production, like other productions, are determined by the socio-economic-political structure and also by the complex structure of man himself and his interests, it is something like when Sigmund Freud introduced the knowledge that children, even in their baby age, are more born with sexuality when the belief until

then was of its total absence, in a state attributed to angels. Yes, dear and respected colleagues, science is earthly.

The author presents the history of gravitational waves by Einstein linking it to his biography and his time in order to understand it according to the way of thinking treated in this introduction. We will see his connection with the history of the Semites, Einstein's personality in handling his conflict-generating circumstances in his competitive relationships with his colleagues and in the formulation of the so-called general theory of relativity. We will fall back on the vicissitudes that Einstein experienced in the transition from his scientific work to normal science as a pillar of theoretical physics. We will deal with how Einstein introduced the relativistic ether, conferring an "odor of materiality" to his geometric explanation of gravity, where it undoubtedly does not fit, but that he had to give in to the pressure that was justified by his more renowned colleagues, led by Lorentz. Einstein had to do it to stay in the queue that would lead him to the Nobel. It was thus, as developing the relativistic ether thread, in June 1916, he introduced the gravitational waves of which, in an act of personal liberation and scientific honesty, when he could, in 1938, he demonstrated how they could not exist, within the scenario of its relativity, to immediately also put an end to the relativistic ether.

1 The Semites

The 19th century was for the Semitic diaspora (Hebrews, Israelites and Jews), who apparently had to do with the global allocation of economic activities those unwanted at the time by others, in the wake of their legendary dedication to trade, from which they would end It is said "eliminated", to achieve great excellence in banking and finance, started as usurers, a practice condemned by pre capitalist ideologies of yielding money from the same money. Among its most important managers in banking are, from the time of the Cid, Raquel y Vidas (11th century), Aaron of Lincoln (12th century), Aaron of York and Vidal Benveniste da Porta (13th century), Joseph Nassi (16th century)), Joseph de la Vega (17th century), the Gradis and Amschel Moses Bauer (18th century), the Pereyra, the Warburgs and the Rothschilds (19th century) [1]; In their future, at the dawn of the 20th century, they participated in the financing of the atrocious First World War (1914 to 1918), in addition, it is said that they controlled the finances of the reparations system imposed on the Germans in the Treaty of Versailles after their defeat. And, on the other hand, to place himself at the intellectual peak due to the creation of his most prominent quartet: Karl Heinrich Marx (1818-1883) author of scientific socialism, Sigmund Freud (1856-1939) maker of psychoanalysis, Arnold Franz Walter Schönberg (1874-1951), initiator of twelve-tone music and Albert Einstein (1879-1955) founder of the current paradigm of relativistic physics.

The economic success, throughout the centuries of the Semites, together with their cultural characteristics, brought them anti-Semitism, in its racist manifestation, in most of Europe and in the United States, as an expression of the extreme right of politics At the height of the capitalist revolution and post-evolution, pre-Christian religious and ethnic antisemitism once escalated in Greece and Rome and then Christian, occurring from antiquity to the Middle Ages. In tsarist Russia the most serious anti-Semitic events occurred with the pogroms, the first one presented in Odessa, in 1859, and then the successive ones, between 1881 and 1884, on the occasion of the assassination of Tsar Alexander II, being accused without evidence of being the authors of the conspiracy. In Europe during World War I and post-war, anti-Semitism was radicalized, becoming the mainstream political current, producing tragic consequences during Nazism with the Holocaust. The answer was

the accelerated exodus of the Semites during the 19th and early 20th centuries to America, especially to Argentina and the United States, where they had previously arrived, and the emergence of the ideological, political and cultural movement of Zionism, which went against the assimilation of the Semites, scattered around the world, with the nationalities from which they were born, and their gradual union through the symbol of Zion, a fortress that defended Jerusalem, promoted by Theodor Herzl, in 1895, in his project of founding a Jewish State, achieved with the creation of Israel, in 1948, and who held, in Basel, in 1897, the first Zionist Congress, where the International Zionist Organization emerged [2].

The human being is a historical and social being. Einstein born in Ulm, in 1879, and for that reason German, but due to his Semitic origin, did not live as such, ceasing to be so legally, in 1896, in order to avoid military service, although he had to remain stateless until 1901, when he was nationalized in Switzerland. From this double condition regarding his place of birth and his ethnic origin, in particular, the double tendency that governs life was characterized in social terms, paraphrasing Freud: Eros the tendency that protects us and Thanatos the tendency that destroys us and that by natural reason makes us condemned to die. Eros and Thanatos were exchanged in time in the case of Einstein, mainly and sadly for political reasons, determining the good and the bad that he lived, originated in his condition as either a German or a Semitic scientist. He was protected for being a Semitic, most of the span of his existence, although within which opposition also originated and in the rest for being German. It is that both geniuses and all of us depend on politicians, who in their actions exercise power, which like the sword of Damocles hangs over our destinies.

Einstein pre-graduated from the Zurich Polytechnic as Professor of Physics, his German teacher, Heinrich Friedrich Weber prevented him from getting a job at the University, until an uncle of his Semitic colleague Marcel Grossmann, of better social position, because he belonged to the upper class already that his father owned a factory near Zurich, that his middle-middle class, managed to get him into a third-class job at the Swiss Federal Intellectual Property Office in Bern, a patent office, where he worked from 1902 to 1909, formulating the theory of special relativity in 1905 while obtaining the PHD in physics, from the University of Zurich. Einstein's disadvantaged social position was well typified in the letter that, from Milan, on his pilgrimage to find better fortune, his father Hermann sent to the influential professor Wilhelm Ostwald, who was Nobel Prize in chemistry in 1909: “Excuse me, please , to a father so daring as to turn to you, dear Herr Professor, in the interest of his son. Albert is twenty-two years old, studied for four at the Zurich Polytechnic, and passed his exam with complete success last summer. Since then he has been trying unsuccessfully to get a job as a teaching assistant, which would allow him to pursue his education in physics. All who are in a position to judge him praise his talents; I can assure you that he is extraordinarily studious and diligent, and that he experiences a great love for science from him. As a result, he is deeply unhappy at his current lack of employment, and becomes more and more convinced that he has lost his career path. Likewise, he feels oppressed by the idea that he represents a burden for us, that we are people of modest means” [7].

During the development of the so-called general relativity he was aided mainly by his Semitic colleagues.

Given his success as a scientist, for his work between 1905 and 1913, he was assimilated by the Germans, at the request of Max Karl Planck and Walther Hermann Nernst, between 1914 and 1932, by linking him, without the obligation to teach, to the Humboldt University of Berlin, make him a

member of the Prussian Academy of Sciences and director of a small institute of physics without administrative tasks, for which he reacquired German nationality, between 1918 and 1932, and joined the German Democratic Party, a political expression of the liberals of left, promoter of the bourgeois form of republican and democratic government, created in 1919, at the beginning of the Weimar Republic, in which intellectuals such as Thomas Mann, Ludwig Quidde and Max Weber militated and dissolved with the rest of the parties, in 1933, by the Nazis on the pretext of the night of the Reichstag fire, which they probably caused by manipulating the young unemployed Dutchman Marinus van der Lubbe as their material executioner, and served them to impose its colossal totalitarian regime. Einstein publicly resigned the positions and German nationality in 1932, before the Nazis had withdrawn them, leaving Germany with Elsa his wife, his secretary Helen Dukas and his assistant, since 1929, nicknamed "Einstein's calculator", the Austro-Hungarian mathematician Walther Mayer, also a graduate of the Zurich Technology University.

The lives of the citizens of a nation can abruptly change tragically, and there is no people that is safe from it, when the unenlightened political current of the extreme right comes to power, as happened in Germany with the Nazi party made up of the for military veterans of the First World War who fought the communist uprisings that emerged at their end, in 1919, and in exchange for the Marxist conception of history proposed by the Semites Rosa Luxemburg and Karl Liebknecht, tortured and murdered by them, imposed the mythology of the Aryan race.

With the arrival of Hitler to the chancellery, Einstein opportunely emigrated to the United States, protected by the Zionism on which he depended economically from now on, and to which he had adhered under the strong leadership of the Semitic politician Chaim Weizmann, between 1921 and 1932, pronounced numerous speeches, with the purpose of helping to raise funds for the Semites and support the Hebrew University of Jerusalem, founded in 1918, being his first visit to the United States, in 1921, prepared by Weizmann and welcomed in large numbers by the Semitic colony, however opposition from a rival Zionist group in the United States led by Harvard lawyer Louis Brandéis. A year later, in 1922, Einstein was awarded the 1921 Nobel Prize, which had not been awarded in due time and seemed to be left vacant, but thanks to Carl Wilhelm Oseen, director of the Nobel Institute for Theoretical Physics, who on the one hand seduced to his colleagues that Niels Bohr was the Nobel 1922, desired by them, and Einstein was, not because of the general relativity, supposedly proven, by Sir Eddington, in the eclipse of 1919, because of the very strong opposition within the Committee of the Nobel, but instead it was given to him for his theoretical work of 1905, explaining the photoelectric effect, experimentally verified, in 1916, by the American physicist Robert Millikan, who also partly, in 1923, was Nobel Prize in Physics for the same and discovered by the Hungarian physicist, nationalized in Germany, Philipp Lenard, who was a National Socialist and anti-Semite; "As an active defender of Nazi ideology, he supported Adolf Hitler in the 1920s and was an important model for the" Deutsche Physik "movement during the Nazi period" [3]. For years, Lenard had conspired against Einstein being awarded the Nobel for general relativity, and by doing so, he further enraged himself when he was a pioneer on the subject of cathode rays that had led Einstein to the photoelectric effect, for which he wrote an official protest letter to the Swedish Academy, stating: "Einstein misunderstood the true nature of light and that, furthermore, he was a publicity-hungry Jew whose approach was alien to the true spirit of German physics" [7]. To Lenard's full humiliation, because Einstein was in Japan, it was the German ambassador to Sweden who received the award on his behalf, in Stockholm. There is no doubt that the German scientists had an influence as follows: “In 1921, the obsession of public opinion with Einstein was in full swing, for

better or for worse, and there was a real current of support for him in which so many physicists participated. theoretical and experimental, Germans like Planck and non-Germans like Eddington" [7]. Lorentz, Niels Bohr, and Planck ran for him, although his letter came late.

So important was Einstein to Zionism that even when Weizmann, Israel's first president, died in 1952, Einstein was offered the presidency, which he declined saying: "I am deeply moved by the offer of the State of Israel and at the same time ashamed and ashamed. for not being able to accept it. All my life I have dealt with objective matters, so I lack the natural aptitude and experience to deal properly with people and to perform official functions. I am the most afflicted by these circumstances, because my relationship with the Jewish people has become my strongest human bond, since I became fully aware of our precarious situation among the nations of the world" [3].

Special and general relativity were not the result of Einstein's institutional work within a team of scientists, but the work of an independent researcher, on the stage of theoretical physics. It is said that her colleague servia, from the Polytechnic, where they met, in October 1898, a mathematician-physicist, Mileva Marić, a close companion since that year, when she returned from the University of Heidelberg where she had temporarily attended as a listener, and who was his first wife, between 1903 and 1919, who died in 1948, breaking during those years, with the Semitic practice of marrying between them in order to protect their patrimonies, although separated since 1914, contributed with his knowledge so that Einstein could develop his 1905 "annus mirabilis" articles on the photoelectric effect, Brownian motion, and the special theory of relativity. "Earlier this year, Mileva wrote to a friend: We have recently completed a very important job that will make my husband world famous." According to Evans Harris, the theory of relativity began with the thesis that Mileva wrote and submitted to the supervision of Professor Weber [who persecuted Einstein for several years and from which he rested upon his death in May 1912] when he was studying at the Zurich Polytechnic School, whose memory has been lost. The photoelectric effect has its origin in the works of Mileva when she was studying in Heidelberg with the [anti-Semitic] professor Lenard, who was later awarded the Nobel Prize in Physics [in 1905), for his experimental work on the photoelectric effect [properly, by cathode rays]. Instead, the theory of Brownian motion is the product of Einstein's thought and his interest in thermodynamics. Mileva contributed to it with mathematical work, describing the disorderly movement of molecules" [3]. In 1919, Einstein contracted his second and last nuptials with his cousin Elsa Einstein with whom he began a special relationship in 1912 that apparently became intimate from 1914 and lasted until her death in 1936, thus complying with the Semitic marital rule, and making Einstein more culturally Semitic. Einstein as a Zionist was a pacifist, so much so that he opposed the creation of Israel, foreseeing the bloody conflict with the Arabs as it has occurred and condemned the practice of Zionist terrorism which, sponsored by the United Kingdom, started the exodus of the natives of the Palestinian territory in the 1948 Deir Yassin massacre. Einstein sent a letter to Shepard Rifkin, the Zionist leader of the United States, warning him: "When a real and final catastrophe falls on us in Palestine, the main person responsible for it will be Great Britain, and the second responsible will be the terrorist organizations born from our own ranks. I would not like to see someone associated with these criminal and deceitful people." [4].

In the development of general relativity, between 1908 and 1916, he counted on the sporadic collaboration mainly of colleagues of Semitic origin from the Zurich Polytechnic. These collaborators were, in 1913, the engineer Michele Besso, also a former colleague at the patent office, who with

his help laid the basis for determining the equation that gave the approximate anomaly of the orbit of Mercury in 1915, and the mathematicians Hermann Minkowski professor of this subject at the Polytechnic with the introduction of the structure of spacetime and the "geometric thought and method" [5] of Felix Klein's Erlangen program, on the new non-Euclidean geometries, in special relativity in 1908, and Marcel Grossmann who was a classmate during the first two basic years in section VI A, specialized in mathematics, physics and astronomy of department VI, the School for mathematics and science teachers since in the third and fourth year of the degree they separated into the physics classroom and the mathematics classroom. Marcel graduated in mathematics with a PHD, also in mathematics, from the University of Zurich. Grossmann, who at the height, July 1912, was the director of the Polytechnic's department of mathematics, probably because of his mathematical talent, genius but mainly because of his class origin, introduced Einstein to the use of the absolute differential calculus, which applied to the spacetime in the positive Riemann curvature manifold, concluded the Erlangen program, taking gravity out of physics, in 1915, and placing it in geometry, explaining it as an effect of geodesic motion on the geometry of the supposed curved spacetime, but previously applied to the Minkowski plane spacetime they produced the field equations, Grossmann-Einstein, of the Entwurf theory, in 1913, which lacked the general covariance so Einstein to justify them had to elaborate the argument of the hole, anyway the best work Einstein's scientist, since the static gravitational field possessed impulse energy like the static electromagnetic field and, consequently, it complied with the principle of conservation of energy-impulse by bringing it together with the other material fields. Other Einstein collaborators were the German David Hilbert, a mathematician who graduated from the University of Königsberg, although in very tough competition that cost the science of physics very expensive and whose consequences have not ended, since they extend to our days, in the final obtaining the Einstein-Grossmann-Hilbert field equations, in 1915, of the so-called general relativity and of Karl Schwarzschild, mathematician, of Semitic origin, undergraduate from the University of Strasbourg, who, in 1915, found the exact solution of the orbit of Mercury and a little later, in 1916, the first exact solution of the Einstein-Grossmann-Hilbert field equations. By adopting general covariance in field equations, Einstein had the help of the German philosopher Moritz Schlick, founder of the Vienna Circle of Logical Empiricism, with whom he developed "the point coincidence argument" by overcoming his hole argument. For being a friend of the Semites, “on June 22, 1936, when Schlick was walking up the stairs of the [Vienna] university to go to class, a former student, Johann Nelböck, drew a pistol and shot him in the chest. Schlick died shortly after. Nelböck was tried and sentenced, but it became a cause celebration for growing anti-Semitic sentiment in the city (the fact that Schlick was not Jewish was overlooked). Nelböck was released on parole shortly thereafter and converted to the Austrian Nazi Party” [3].

It was only until 1934, a year after its connection to the Institute for Advanced Study, in Princeton created, privately, in 1930, by the Semites the wealthy financiers Louis Bamberger and his sister Caroline Bamberger, contributors of money, and the prestigious educator Abraham Flexner at his initiative, in theory for Semitic emigrants since he admitted of other nationalities such as the Chinese Chen Ning Yang, the British Freeman Dyson, the Austro-Hungarian of German ethnicity Kurt Goedel, the German Hermann Weyl etc., that from Of his 54 years of age, Einstein worked institutionally in his research without teaching tasks except occasionally attending small groups of students, earning, it is said, US $ 15,000 per year, although less than in total he got to earn in Berlin, which they were cut in half when he retired.

On two previous occasions, Einstein had visited the United States and, on his second visit, in 1931, Robert Millikan wanted to link him to the California Institute of Technology (Caltech), which Einstein rejected.

The Institute for Advanced Studies is often confused as belonging to the University of Princenton, perhaps due to its locative proximity with which it had no other link, much less formal, and Einstein as her teacher, when he never was, it is said due to anti-Semitism thence.

At the Institute, of course, always with Semitic scientists, except with Walter Mayer who came with him, from Berlin, as a researcher Einstein worked, with Nathan Rosen as his assistant until 1936, with whom he was co-author of the Einstein-Podolski-Rosen paradox in quantum mechanics, the supposed Einstein-Rosen bridge in general relativity and the famous article in which they denied the existence of supposed gravitational waves.

With the departure of Rosen to Russia, between 1936 and 1938, Einstein had as an assistant the physicist Leopold Infeld with whom he produced the equations that describe the motion of stars in general relativity, the final article in which with Einstein they reaffirm the non-existence of the supposed gravitational waves and the fascinating work, which the author read in his adolescence, in the Luis Ángel Arango library in Bogotá, "The physical adventure of thought" whose economic benefit Einstein shared with Infeld.

Later, between 1940 and 1946, Einstein had other assistants such as the mathematician and physicist Valentine Bargmann and the physicist Peter Bergmann, with whom he published, in 1941, on the classical Kaluza-Klein theory in five dimensions and, between 1944 and 1948, the mathematician Ernst Gabor Straus with whom he published "The influence of the expansion of space in the fields of gravitation that surround individual stars", in 1945, and "A generalization of the relativistic theory of gravitation II", in 1946.

However, “the stay at Princeton was not as profitable as he himself, and the professors of the Institute itself, had wished. Philip Franck, well acquainted with the life and work of Einstein, whom he replaced at the University of Prague, and one of his most reliable biographers, attributes this disappointing result to the fact that one of Einstein's characteristic features was "his absolute independence from the environment around him." Einstein himself recognized the little ascendancy achieved in the Institute when he wrote (4/12/1949) to Born, to whom he had promised a long stay at this Institute: "I proposed it, but I have little influence; they consider me petrified because with the I have been deaf and blind for years (figuratively). It does not matter much to me, since it is quite according to my temperament" [6].

Einstein's assistants apparently did not earn any amount from the Institute since despite Leopold Infeld being a Semitic and all the efforts that Einstein made in his favor “Flexner, already upset that said institution had been forced to hire Walther Mayer, he was reluctant. Einstein even went so far as to personally attend a meeting of the Institute's members — which he rarely did — to ask that, if necessary, a minimum stipend of US 600 be paid to Infeld alone; but it was in vain” [7].

When Einstein turned 66, in 1945, he retired from the Institute for Advanced Studies, but he continued working in a small office, on flexible hours, and counting on his assistants, seeking the unattainable theory of the unified field [7], according to his biological existence the inexorable grim reaper, in 1955, at the age of 76, whose threatening daily presence had been there for seven years,

caused by the rupture of the abdominal aortic aneurysm, which Dr. Rudolph Nissen had surgically wrapped in 1948 in a yellow colored cellophane “that was sutured to the retroperitoneum on both sides of the aneurysm, waiting for the cellophane to cause a great inflammatory and fibrosis process on the pulsatile mass to prevent its growth and rupture” [8]. On April 15, Einstein was admitted to the Princenton hospital suffering from the same cause, for which he should have undergone surgery for a second time, which would have prolonged his chimerical adventure of the search, from the absolute differential calculus, of a philosopher stone, chemically in pure tensor terms, and will deliver the unification of all the fields, most likely bringing them together as geometric entities, still impossible for such a powerful tool, before geometric gravity converts it into a material field, as from the supposed waves gravitational of LIGO, 2015, it is claimed has been established, rather achieved by the genius of the engineers, to whom entrusted a project, however unlikely they always find the technique to carry it out, although on this occasion they found a new class of quadrupole waves of the quantum vacuum in front of an impossible that had been entrusted to them, however just in time for the celebration of a century of the forced and spurious formulation of the aforementioned gravitational waves, by the justified pressure of Hendrik Antoon Lorentz, who had not accepted geometric gravity and had ordered him to use the expression of relativistic ether, returning gravity to the physical realm at least figuratively. But Einstein refused to be intervened again saying: “I want to leave whenever I want. It is in bad taste to prolong life artificially, I have done my part, it is time to go, I will go gracefully”, three days later he passed away in his sleep at 1.47 a.m. [8]. Perhaps his last act in which he broke forever with the manipulation in spite of himself in which he spent a good part of his life, of a good man, striving to be honest, sustained in living only in his action of understanding and always in approximation to give a temporary solution to a great scientific problem pending at the moment, paradoxically, outside its present, as happens to all of us since although everything that exists passes in time at the same time we remain in its absence and, at its regret, turned into a puppet of the interests of power, not always exempt from perversion.

In the next 24 hours, and behind the protection of Zionism, according to his express wish: "I want to be cremated so that people will not worship my bones", his ashes were thrown into the waters of the Delaware River, in a ceremony private in which his eldest son Hans was, but not his other son Edward incapacitated by the schizophrenia he suffered, and other close relatives, but without his brain that was stolen, early on April 18, by the pathologist in charge of performing his autopsy, the American Thomas Stoltz Harvey, who fired was “hired by the University of Pennsylvania, took the brain with him and dissected it into 240 pieces that he preserved in celloidin, a hard and elastic form of cellulose. Later he created twelve sets of 200 slides containing tissue samples” [9]. In the following years Harvey, until his death, in 2007, it is said sporadically, always with the same kitchen knife he obtained smaller pieces that he packed in mayonnaise jars and profited by sending them to extravagant recipients, that if they were not Russian because of the ridiculous imminent danger to national security, feeling paranoid about the cold war unleashed between the West and Russia. In 2010, 55 years after Einstein's death, Harvey's heirs donated the last pieces to the US Army National Museum of Health and Medicine [9]. But this is not the macabre end since everything denied by Einstein, from his unfortunate, but fabulous powerful equations of 1915, such as black holes, gravitational waves that have already been declared existing, and white holes and parallel universes that are on the way of be it, transferring science from physics to science fiction.

2 Einstein's pattern of response to conflict

The strategy used by Einstein to handle conflict throughout his life was recommended to his friend Paul Ehrenfest, a Semitic physicist from Vienna, who by his origin felt professionally disadvantaged, aggravated by refusing to profess any religious affiliation once left Judaism. Einstein, who when proposing to leave his position as professor of theoretical physics at the Carolina University (Charles University) in Prague, a few months before July 1912, sought that Ehrenfest would replace him and, in April, wrote: “His stubborn refusal to accept any religious affiliation really drives me crazy. You give in, on behalf of your children. After all, once you've become a teacher, you can go back to that strange obsession of yours."… "Unlike Einstein himself, he was willing to give in and write 'mosaic' on his official forms" [7]. Einstein had also abandoned Judaism, without professing another religion, which was required to hold a post in the Austro-Hungarian Empire, of which Prague was a part.

Einstein's strategy was to temporarily postpone the exercise of his ideas without giving up those that he would return to when overcoming the obstacles that prevented him. With regard to gravitational waves, we will refer to two occasions in which Einstein used this strategy when he found himself in conflict with his colleagues and a third of crucial consequence when in the feverish dispute, in 1915, with David Hilbert the renowned German mathematician "as one of the most influential of the nineteenth and early twentieth centuries” [3] was led to the geometrization of gravity, although unlike gravitational waves this time with no return. Regarding gravitational waves: one was, in 1916, with Hendrik Lorentz, Nobel Prize winner in Physics in 1902, when he introduced them, and the other, in 1936, with Harvey Robertson, a professor at Princeton University, when he denied their existence.

While it is true that Einstein carried out his work on general relativity extra institutionally, he corresponded with notable scientists of the time, whom he kept regularly informed of their advances, setbacks, difficulties, and solutions, sometimes personally.

During the development of the so-called general relativity, his communication with Lorentz was reiterated to whom he professed a special esteem because he had with him, it is said, a son-to-father relationship. "In the words of Abraham Pais, Lorentz would become the only father figure in Einstein's life" …"Einstein had written to a friend: I admire this man like no other; I could almost say that I love him". When Lorentz died in 1928, Einstein would say in his eulogy: "I stand before the grave of the greatest and noblest man of our time". And in 1953, in celebration of the centenary of Lorentz's birth, Einstein would write an article on the scientific importance of him: "Everything that came from his overmind was as lucid and beautiful as a good work of art"...”For me he personally meant more than any other person I have ever met in my life” [7]. Since 1913, Einstein had visited Lorentz almost annually, "either in Leiden, or in some nearby seaside resort town" [7].

However, Einstein in special relativity without properly denying the ether, considered it unnecessary: “The introduction of a <luminiferous ether> will be superfluous insofar as the view developed here will not require an <absolutely stationary space> provided with special properties, nor assigning a velocity vector to a point in empty space in which electromagnetic processes take place" [10], for Lorentz existing without renouncing it during his life, for which he maintained a fundamental difference in his scientific conception that was a source of tension between the two. "Lorentz continued to cling to the existence of the ether and to its frame of reference" at rest. "In a lecture delivered in 1913, which he would later reproduce in his 1920 book <<The Principle of Relativity>>, he stated: "According to Einstein, it makes no sense to speak of a motion relative to the ether. Likewise, he denies the existence of absolute simultaneity. I find some satisfaction in the

oldest interpretations, according to which the ether possesses at least some reality, one can clearly distinguish between space and time, and one can speak of simultaneity without further additions" [7]. It is important to remember that the famous mathematician, physicist and philosopher Henry Poincaré, who died in 1912, friend and critic of Lorentz, did not renounce the ether either.

The scientific discrepancies between Einstein and Lorentz were not only due to the ether, for example, in 1911, at the Solvay Congress, whose central theme was the "quantum problem", where the 20 most famous European scientists attended, among which were: Max Planck, Henri Poincaré, Marie Curie, Ernest Rutherford, Wilhelm Wien and Walther Nernst, being chaired by Lorentz, as president, Einstein was asked for a presentation, highlighting him among the 8 “especially competent members”, which he with some annoyance He called the meeting a “witches' coven” although de Lorentz said: “A living work of art! In my opinion, he was the most intelligent of all the theorists present” [7]. Einstein, in his exposition, overflowed the "quantum problem" in the physical sense, referring it to the "problem of reality" in the philosophical sense of the possible quanta of light proposed by Planck, until that moment lacking clear meaning for him because it refers to unobservable. In accordance with the Einstein´s conception of the world formed within English empiricism, being decidedly in favor of Mach, Hume and Berkeley, thus in special relativity he had ignored Lorentz's ether since: “... unsuccessful attempts to discover any movement of the Earth in relation to the <medium luminiferous> suggest that the phenomena of electrodynamics as well as mechanics do not possess properties corresponding to the idea of absolute rest" [10], "here Einstein mentions the results of Michelson-Morley's experiments although he did not mention the names of the two physicists. This comment on the ether also shows a clear influence on Einstein of the positivist cognitive theory of E. Mach, W. Ostwald, and R. Avenarius. Einstein induced that <no characteristic attribute of phenomena corresponds to the notion of absolute rest>, in other words, absolute rest remains beyond any experimental proof, <not only in mechanics, but also in electrodynamics>. Lacking the typical attribute of a phenomenon, it became a metaphysical interpolation that, according to Mach and other positivists, should be eliminated from physics. The young Einstein, delighted with Mach's cognitive theory and also with other positivist views, found reasons to doubt the existence of the ether. The ether of electromagnetism by H. A. Lorentz, identified with absolute space at absolute rest, became something metaphysical in the eyes of Einstein” [11]. But, from the Solvay Congress to the Einstein declaring regarding the Planck light quanta: "Those discontinuities, which we judge so disturbing for Planck's theory, seem to really exist in nature" begins its breakdown and its slow, hesitant and unfinished transition over more than 40 years, to be a realistic scientist, fully believing "of an underlying reality in nature that was independent of our ability to observe or measure it". His presentation was objected by Lorentz, Poincaré and Planck among others, from the physical point of view, although limited to the knowledge at the time, based on Maxwell's equations, support of the electromagnetic wave model [7]. Years later, in 1923, Arthur Compton, 1927 Nobel Prize winner, experimentally observed photons, the quanta of light. Of course, Einstein's initiation in realism, absent in his antecedents, was not the result of his study and understanding of the philosophy of materialism, much less dialectical, for his time consolidated in the philosophy of Marxism, which it declares as his main principle: "material existence prior to and independence from consciousness" but from his brilliant scientific intuition. Strictly speaking, scientific realism “in one of its most widespread meanings, is the thesis according to which scientific theories, at least in the sciences that have reached sufficient maturity, must be interpreted as approximately true descriptions of reality. More precisely,

scientific statements about the world must be interpreted as approximately true statements, both in what they establish about observable phenomena and in what they establish about entities or processes that are not directly observable. This thesis has as a corollary that the theoretical entities postulated by scientific theories should, as a general rule, be considered as existing" [12].

3 Ether the reason for discord

The ether, although it constituted in special relativity the reason for the main scientific clash that occurred between Lorentz and Einstein, far exceeds these two geniuses since their lawsuit does not go further than to inscribe them oppositely in the two currents existing since the dawn of philosophical thought. by responding differently to the major problem: if space exists empty of matter for Einstein, although full of the metric field, that is, of nothing, or it is full, not of matter but of energy, for Lorentz.

In the 3rd century BC, the ether was formally introduced by Aristotle, against the philosophical thesis of Leucippus and Democritus on atomism on atoms and emptiness. Aristotle raised the ether, in the region beyond the Moon, as a weightless substance, filling space, as the indestructible and immutable quintessence, unlike the other four substances of water, air, fire and earth convertible one into another; After all, Aristotle's conception aims through the four elements to give the components of the stars and through the ether of the supposed emptiness of space, what a genius that was Aristotle! that is to say, due to the primordial ontological reason of being versus not being, in the end, both relative states of the dynamic being, since only being exists: thus, the ether appeared as the substance that fills the vacuum, or rather the ether in exchange for the vacuum, because according to Aristotle there is no vacuum and for the Aristotelians: nature abhors the vacuum [13], which medieval thinkers made famous as: horror vacui.

Since its foundation, the ether was of a mechanical material nature, that is, a substance with its respective material attributes, an active vision for a long time, more than twenty-one centuries since there was the "conceptual change in the concept of ether between approximately 1875 and 1930" when it was replaced by the physicists by the field, although extinguishing the ether but, nevertheless, for the author and others, the de-mechanized ether comes to be in the entire Higgs field and the rest of superimposed fields whose energy quanta are the different virtual particles of the quantum vacuum, which therefore correspond to the Bose-Einstein statistic.

With the Renaissance the concept of ether, from philosophy, passed to physics. In 1644, Descartes proposed the ether as a continuous fluid, made up of very small particles, which transmit forces from one object to another by collisions of the particles, which completely fills the space not occupied by solid bodies because there is no true empty; it is contrary to reason to say that there is a void space in which there is absolutely nothing. Thus, Descartes added a logical reason for the existence of the ether complementary to the ontological reason and as the action of forces is by contact, since there is no action at a distance, for the first time, the ether was justified in a physical reason [14].

When, in 1644, Torricelli carried out his experiments that demonstrated the existence of a vacuum and that the effects, attributed to the horror vacui, were actually due to air pressure, leading to the resurgence of atomism and the scientific revolution that, in 1604, year mirabilis, Galilei had inaugurated, with the introduction of the observation-experiment-induction method [15], but despite Torricelli's experiments, since they do not go beyond proving the absent emptiness of

matter in its substantial forms, fermionic matter, more not absolute emptiness, so philosophically the discussion was continued between plenists (emptiness is not possible in nature) and the defenders of emptiness (emptiness is) [16], although Torricelli incidentally proved the non-mechanical nature of the ether, which at that point could not be understood, due to historical limitation, since the material existence in the form of virtual particles, that is, of the quantum vacuum, was not known.

In 1678 and 1690, in analogy with sound, Huygens formulated his wave theory of light in which waves propagate longitudinally, with a finite speed, through a stationary ether, giving an explanation of rectilinear transmission, reflection, refraction, aberration (although half), and superposition of light and introduced the second physical reason for the existence of the ether as a transmitting medium of the light ether and the gravitational ether that would circulate through the center of the Earth. But, he could not with the photoelectric effect nor with the polarization of light.

In 1687, when Newton formulated, in Mathematical Principles of Natural Philosophy, Galilei's laws of motion, the vacuum became an essential component of the Universe, he introduced action at instantaneous distance, and to preserve the principle of relativity and the law of energy-momentum conservation, it must be assumed that the Galileo-Newton space is absolutely empty [17], but Newton contradicted himself, in 1704, in his article on Opticks, where in his corpuscular theory, he postulated a corpuscular ether, as luminiferous ether to explain the refraction and diffraction of light. Newton said that the light rays consisted of a stream of particles in rectilinear motion and that the light particles stimulated, or were accompanied by, vibrations in an omnipresent particulate ether. And, in 1717, Newton declared that ether (as gravitational ether) is a tenuous stationary medium, composed of particles, with a variable density, denser in empty space than in the vicinity of massive bodies, to explain gravitational effects [18]. Actually, Newton's theory was corpuscular-wave, far ahead of Einstein, although it is only recognized as corpuscular because the wave was from the ether.

In 1748, Georges-Louis Le Sage proposed a kinetic ether consisting of tiny particles, called corpuscles, that flow in all directions with enormous speed, and he used their corpuscles as the basis for a kinetic theory of gravity.

In 1801, Thomas Young formulated that ether is a gas at absolute rest.

In 1803, Pierre Simon de Laplace proposed an ether of variable density, proportional to the radial distance from the center of a body and that the force of gravity is generated by the impulse of said ethereal medium, a kind of gravitational wave, which is it propagates with a speed between 7 and 100 million times that of light [19].

At the beginning of the 19th century, under the assumption of the existence of the mechanical ether, the problem arose if the Earth was at rest or movement relative to the ether, which when responding produced the models of the drag of the ether so that the Earth would be at rest. and of the ether that permeated everything through which the Earth would be in relative motion. In the first model the speed of light would be independent and in the second it would not, since it would be a function of the "ether wind".

Due to the discovery of the polarization of light, in 1817, Augustin Fresnel introduced the theory of transverse waves of light, only correct in transverse waves, because of the high density of a rigid

gaseous ether so the direction of the propagation would be perpendicular to the vibration of the light ether and the theory of the partial drag of the ether since the Earth in its rotational movement would drag it because the ether would be at rest in space, something similar to internal gravitomagnetism, or drag of frame, deduced from Einstein's equations of the so-called general relativity, which is said to have been demonstrated in the GP-B experiment and that according to Fresnel, given his mechanical vision of the ether, the “ether wind” would significantly affect the propagation of the light. Fresnel had the positive result of the Fizeau experiment of 1851 in his favor and the Michelson-Morley experiment against him. The explanation of the transverse waves behind the electromagnetic wave, which it really is, caused Fresnel to speculate that the ether would be solid and rigid, yet absurdly it allowed the free passage of the celestial bodies, while the ether flowed through the interstices of material bodies even on the smallest scale, the density of ether in a material body was different from that of free ether.

Between 1828 and 1839, Cauchy proposed a dynamic ether, due to its changes in its density and its elasticity, consequently, the ether would be contractile or labile, possessing a negative compressibility (today called negative Λ). Green pointed out that Cauchy's contractile ether would be unstable and would tend to shrink in size, all the time.

In 1845, George Stokes contradicted Fresnel, since, the ether would be solid and elastic that would flow almost without obstacles through all the matter in movement, that is to say, there would be total drag for which the null result of the Michelson-Morley experiment favored it, that ensured the independence of the speed of light as there was no relative movement of the Earth with respect to the ether as in general of the stars in movement of rotation or translation, canceling any similarity with internal and external gravitomagnetism, but had to be contradicted and accept the Fresnel coefficient of friction to account for the result of Fizeau's experiment.

In the 1860s, Maxwell formulated the electromagnetic ether, which has the properties specified by his equations [20], as a quasi-material elastic stationary medium, as the preferred frame of reference in which light propagates with constant velocity in all directions; whether the ether is continuous or discrete remained undecided. Therefore, Maxwell formulated that light is an electromagnetic wave, a concept that originated in the Faraday lines of electric and magnetic forces approximately correct up to that point, since the electromagnetic wave, represented in a three-dimensional Cartesian system, are perpendicular oscillations of the electromagnetic field, conventionally the electric oscillation in the x direction, the magnetic oscillation in the y direction, while the electromagnetic wave propagating in the z direction. Above the lines of force, Maxwell said, there were tubes of ether rotating on their axes. The centrifugal force of such rotations would cause the tubes to expand laterally and contract along, as Faraday had suggested to explain electromagnetic attraction and repulsion. These rotating tubes would transport electrical particles, from one tube to another and to the next, in what amounts to a form of transverse undulations at the speed of light. Despite the inclusion of microscopic spinning tubes, ether was considered a stationary medium [19]. Electrodynamics was seen as the mechanics of fluids, so the ether was visualized as water at rest, as a medium that permeates the universe and allows electromagnetic waves to propagate [21]. The evolution of the concept of ether, within the mechanical context, “led to the electromagnetic ether constituting the carrier substrate of the electromagnetic wave and providing the special framework in which Maxwell's equations are valid and, as gravitational ether, an anachronistic concept. after Maxwell, since the luminiferous ether would act as an interaction

force on particles and bodies, it would bring the action in contact and produce the gravitational effect. With Maxwell's electrodynamics, the luminiferous ether is replaced by the electromagnetic ether that Maxwell still tried to mechanically interpret his field theory using mechanical models of ether. “For Maxwell, the electromagnetic ether was a material substance akin to ordinary ponderable matter, but <of a more subtle kind>. It had the property of filling the entirety of space, including the interior of transparent bodies and probably also that of opaque bodies. As a material substance, the ether had to be endowed with mass and could have a molecular composition. Maxwell tried to calculate, from certain luminous phenomena, the density, elasticity, and other properties of ether, which shows clearly that he considered it to have the same class of properties as ordinary matter. The ether was, then, a body. However, Maxwell cautions that there are very special mechanical properties that must be attributed to it, so that it can fulfill the function of transmitting electromagnetic waves. It had to be, for example, a completely homogeneous and isotropic body” [22].

Huygens, Young, and Maxwell partially agreed with Newton; but they corrected it and added that the ether is the medium of propagation of the light wave (including Maxwell's electromagnetic wave) and Euler and Young agreed with Huygens. The introduction of vacuum, in classical physics, could not eliminate the ether, although it was not understood that the ether could not be mechanical.

The interferometry experiment carried out, in 1887, by Michelson-Morley, of course, confirmed what was already established by Torricelli with respect to the void absent from fermionic matter and its consistent consequence in that the ether is not mechanical in nature but is energy, if exactly energy, not understood, even in our days, due at that time to the historical limitation that only until 1916, the physicist Walther Nernst, Nobel of 1920, gave the first advance for the discovery of the subsequent form of existence of matter, in the form of the quantum vacuum, or the vacuum of the least energy, if you like made of virtual particles, or bosonic matter and in our time by the calamity of consciousness of not recognizing itself as historical all the time and, therefore, the knowing temporary. It is that science cannot be more than its author, that is, one and the other historical. From the Michelson-Morley experiment the postulate of the constant speed of light was derived.

In 1889 and 1891, George Fitzgerald, proposed that the forces that bind the molecules of a solid are modified by the movement of the solid through the ether in such a way that the dimension of the interferometer arm, in the Michelson-Morley experiment, is it would shorten in the direction of movement and that this contraction neutralizes the optical effect that had been sought; Not only would the ether change the course of objects (as gravitational ether does), it also changes the size of objects; consequently, the ether produces the relativistic effect of contraction of the length of any object, this contraction taking place in the direction of movement and in proportion to the speed through the ether.

In 1895, Hendrik Antoon Lorentz improved Fitzgerald's hypothesis, he also improved Maxwell's electromagnetic ether by the immobile special frame, the only mechanical attribute that Lorentz left him, thus initiating his de-mechanization, where the laws of electrodynamics are valid; since the atoms of all solids are held together by electrical forces; the movement of a body, according to Maxwell's mechanics, superimposes on the electrostatic forces between the atoms a magnetic effect due to the movement; The result would be a contraction of the body in the direction of movement that is proportional to the square of the ratio of the speed of translation and the speed

of light and that would have a magnitude such that it would cancel the effect of the drift of the ether, in the experiment Michelson-Morley; this length contraction leads to time dilation for all phenomena obeying Newton's laws and / or Maxwell's laws, in inertial frames, and both contractions lead to the Lorentz transformation between inertial frames, which replaced the transformation of Galilei. This theory was later confirmed, as long as the experiment is carried out under vacuum, the ethereal effect on the optical interferometer is completely nullified. [19], [23] and [24].

For Lorentz, the “ether was a privileged reference for the formulation of the laws of electrodynamics. As such, its only relevant property was immobility. What other mechanical properties he might have were not relevant to physics" [25]. The ether for Lorentz would be the support of the electromagnetic field: “... the ether is undoubtedly very different from all ordinary matter, we can suppose that this medium, which is the receptacle of electromagnetic energy and of many and perhaps all the forces that act on ponderable matter, it is never, by its very nature, set in motion, which has neither speed nor acceleration, so we have no reason to speak of its mass or of the forces applied to it ... idea of forces acting on the ether, we cannot even speak of tensions, because they would be forces exerted by one part of the ether on another" [26].

In 1902, Lorentz, upon receiving the Nobel Prize, had clearly said so: “Thanks to the investigations of Van der Waals and other physicists, we know quite precisely that a large part of the space occupied by a body is in fact filled with its molecules. In fairly dense substances this fraction is so great that we have difficulty in imagining that the earth is such a loose molecular structure that the ether can flow almost completely freely through the spaces between the molecules. Rather, we are constrained to think that each individual molecule is permeable to ether. The simplest thing is to also suggest that the same is true of each atom, and this leads us to the idea that an atom is ultimately a kind of local modification of the omnipresent ether, a modification that can move from one place to another without that the medium itself alters its position. Having reached this point, we can consider the ether as a substance of a completely peculiar nature, completely different from all ponderable matter” [25]. The explanation that Lorentz proposed for the absence of interaction between dynamic matter and the ether at rest was: “… We will add the hypothesis that, although the particles can move, the ether always remains at rest. We can reconcile with this idea, at first glance, a bit surprising, by thinking of the particles of matter as local modifications in the state of the ether. These modifications, of course, may very well travel forward while the volume elements of the medium in which they exist remain at rest. Now, if there is ether inside the electron, there can also be an electromagnetic field, and all we have to do is establish a system of equations that can apply both to the parts of the ether where there is an electric charge, that is, to the electrons, such as those where there are none ... ” [26].

Einstein wrote of Lorentz's electromagnetic theory: “Maxwell still tried to interpret his field theory mechanically by means of mechanical models of ether. But these attempts gradually receded into the background as a result of the representation - purged of unnecessary additions - by Heinrich Hertz, so that, in this theory, the field finally took the fundamental position that the points had occupied in Newtonian mechanics. However, at first, this only applies to electromagnetic fields in empty space. In its initial stage the theory was still quite unsatisfactory for the interior of matter, because two electric vectors had to be introduced there, which were connected by relations dependent on the nature of the environment, these relations being inaccessible for any theoretical

analysis. An analogous situation arose in relation to the magnetic field, as well as in the relation between the electric current density and the field. Here H. A. Lorentz found an escape that showed, at the same time, the way to an electrodynamic theory of bodies in motion, a theory that was more or less free from arbitrary assumptions. His theory was based on the following fundamental hypothesis: Everywhere (including the interior of ponderable bodies) the seat of the field is empty space. The participation of matter in electromagnetic phenomena has its origin only in the fact that the elementary particles of matter carry unalterable electric charges and, therefore, are subject on the one hand to the actions of the driving forces and on the other side possess the property of generating a field. Elementary particles obey Newton's law of motion for the material point. This is the basis on which H. A. Lorentz obtained his synthesis of Newtonian mechanics and Maxwell's field theory. The weakness of this theory lies in the fact that he tried to determine the phenomena by a combination of partial differential equations (Maxwell field equations for empty space) and total differential equations (equations of motion of points), the procedure of which was obviously unnatural. The unsatisfactory part of the theory was manifested externally by the need to assume finite dimensions of the particles to prevent the electromagnetic field existing on their surfaces from becoming infinitely large. Furthermore, the theory gave no explanation for the tremendous forces that maintain electrical charges on individual particles. H. A. Lorentz accepted these weaknesses of his theory, which were well known to him, in order to correctly explain the phenomena, at least as regards his general lines" [27].

It is striking that Einstein criticized the need to "assume finite dimensions of the particles" being the particles finite and, as far as "the tremendous forces that maintain the electric charges" were required to emerge the quantum theory of matter and to discover the nature of the static electromagnetic field with its transmitter the virtual photon responsible for such forces, that is, due to a historical limitation. On the other hand, Einstein affirmed that according to Lorentz "the seat of the field is empty space" when such a seat is for Lorentz the ether, if Lorentz's intention had been, as Einstein wrote, to call the space ether would result in lack of clarity in his language, why call space ether? Inadmissible for anyone who said Einstein: "Everything that proceeded from his supreme mind was as lucid and beautiful as a good work of art." Even more serious because it would have been a lack of ethics of Lorentz, impossible of the: "greatest and noblest man of our time" according to his own qualification, in his controversy with Einstein for whom space was the ether when he had to so designate it. No, not for Lorentz the ether was not absolute space but a class of unknown matter, which would exist as something other than fermionic matter, that is, ordinary matter, for its time simply matter, evidently as the static electromagnetic field, component of the quantum vacuum, the true ether, support of the dynamic electromagnetic field, that is, the electromagnetic wave. Lorentz was on the right track. However, there are many who, probably following Einstein, believe for Lorentz the ether was space.

The conception of the mechanical ether led to it being given contradictory and absurd attributes causing that "any attempt to explain the electromagnetic phenomenon in movement, with the help of the movement of the ether, the movement through the ether or both movements, was unsuccessful" [28].

In 1900, Sir Joseph Larmor formalized that the ether was not matter, of course, it was not fermionic matter that by historical limitation could not be specified. Larmor wrote: "... Matter can be and

probably is a structure in ether, but certainly ether is not a structure made of matter" [29]. Of course, Larmor agreed with Lorentz.

The de-mechanization of the electromagnetic ether continued to differentiate it more and more from ordinary matter. In 1909, Oliver Lodge, like Larmor, belonging to the scientific current, in theoretical physics, de Lorentz questioned:

“Is ether material? This is largely a matter of words and convenience. Ether undoubtedly belongs to the physical or material universe, but it is not ordinary matter. I would rather say that it is not "matter" at all. It can be the substance or substrate or material of which matter is composed, but it would be confusing and inconvenient not to be able to discriminate between matter on the one hand and ether on the other” [25].

What were the characteristic properties of ether that should distinguish it from matter?

Lodge's response was:

“The essential distinction between matter and ether is that matter moves, in the sense that it has the property of locomotion and can effect impact and bombardment; whereas the ether is stretched, and has the property of exerting tension and loosening. All potential energy exists in the ether. It can vibrate and it can rotate, but with respect to locomotion the most stationary body we know is stationary: absolutely stationary, so to speak, our standard of rest" [25].

Cassini and Levinas argue that “the idea that the ether is the true substance of the universe and that matter, that is, particles, a derived reality or a kind of epiphenomenon constitutes the foundation of the so-called electromagnetic conception of the world, which It is usually attributed to Lorentz but was actually widely disseminated among ether theorists in the late 19th century and survived into the early decades of the 20th century. Lodge, for example, had expressed it concisely in 1889 [25]:

… A continuous substance that fills all space: that can vibrate like light; which can be transformed into positive and negative electricity; which in vortices constitutes matter; and that transmits by continuity, and not by impact, every action and reaction of which matter is capable. This is the modern conception of the ether and its functions… [30].

However, it was in Lorentz that, as a reality of scientific thought, "the so-called electromagnetic conception of the world" was reified. This is the story. The same can be said of Einstein's Relativity, etc. etc. Worth the aphorism: "nihil novum sub sole", that is, "There is nothing new under the Sun."

4 Einstein introduces the relativistic ether

Einstein behind the ether, also, of the Michelson-Morley experiment, according to his statements, in 1905, he found a brilliant explanation and solution that he presented as special relativity, unifying Newton's mechanics concerning inertial reference frames with mechanics of the electromagnetic wave, still using Euclidean geometry, three years later, in 1908, integrated into the Minkowski spacetime four-dimensional plane geometry, connecting special relativity with the modern current, at that time, of the geometrization of the physics of the Erlangen program, and paradoxically lavishing such a favor on someone who, when he was a student at the Polytechnic, of which he was

his mathematics teacher, he had called a lazy dog, due to the little interest that Einstein showed in his classes.

Einstein's solution to the problem of the two mechanics of Newton and Maxwell, which overwhelmed physicists, was based on establishing two principles, only applicable to frames in relative uniform motion: Galilei's relativity, from which it follows that the laws of nature are universal, which governed the mechanics of Newton, and the constancy of the speed of the electromagnetic wave, of the mechanics of Maxwell, [31] in the new only relativistic mechanics at the cost of establishing absolute the speed of the electromagnetic wave and relative space and time, reversing the relative velocity and absolute space and time of Newtonian mechanics. After all, generalizing Maxwell's mechanics. From the mathematical point of view, within the reach of everyone who had an elementary training in it, nothing less, than supported in the Lorentz coordinate transformation group in exchange for Galilei's.

The impact of special relativity was so great in the scientific world of the time due to its opportunity in which it occurred, pulling physics out of the impasse, trapped in the crucial contradiction of the two mechanics, when looking in the ether. its solution, denied in the result of the Michelson-Morley experiment, which, under the guise of not requiring it any more, since as Einstein said, the ether was superfluous, the result of the Fizeau experiment, that it was not he spoke again.

Einstein continued to seek to extend the relativity of motion from inertial to non-inertial frames and, in 1907, when he thought he had the best thought of his life, imagining what happened mechanically during free fall, he understood gravity as only acceleration, therefore property of space and time, due to the cancellation of the gravitational mass by its equal the inertial mass, without realizing, in the ecstasy of the mirage of his happiness, that his thought was incomplete, since he left, on the other hand, the other mechanical manifestation of gravity, that when the body on which it acts stops being in free fall and the body endowed again with mass produces gravity to appear as what it really is: a force, as Newton understood it, fable or not, when the apple detached from the tree, in whose shade it rested, struck him, more fortunate than Einstein, in short a stroke of luck. For Einstein gravity, acceleration and inertia were the same, a simple effect of coordinates, an effect of the change in spacetime coordinates, according to Minkowski plane geometry, between reference frames. At that point, Einstein was unaware of the other geometries, such as Riemann's. Movement an illusion because it is finally equivalent to rest. Einstein began, dragged by the rapture of happiness, to walk on the path of no reason. It was only in 1913, when he was working with Grossmann, on his best work: the Entwurf theory, that Einstein seemed to find the right path, understanding that gravity was a physical phenomenon such as electromagnetic that he called extended gravity, so he sought to structure it in a system of equations, using as a tool an extremely complex mathematics of tensors, that of the absolute differential calculus, in which his friend and co-author of that work, Grossmann, had just introduced it. Lorentz congratulated him through a letter, it was not for less, at the time when, by Einstein's demand made to Grossmann, the tensors were applied in Minkowski's spacetime geometry, which deprived him, in his equations of general covariance, in which Einstein still saw the preservation of his general relativity of motion, the foundation of his hope "to ensure that the laws of nature were the same for an observer in accelerated or arbitrary motion as for one moving at constant speed" [7], although, only valid in what he now called homogeneous or point gravity, which is precisely the absence of gravity according to his equations of 1915, of the so-called general relativity. In response to Lorentz, on

August 14, 1913, Einstein, frustrated, commented on the general non-covariance of his equations: "Unfortunately, the gravitational equations themselves do not have the property of general covariance." However, two days later, on August 16, Einstein in a new letter told Lorentz: “that he has renounced the belief that covariance is impossible: <Only now, when that ugly black spot seems to have been removed, the theory is pleasant to me>” [7].

However, because of the failure of the equations of the theory Entwurf had to abandon it and in the very tough competition with Hilbert, under his strong pressure, apply the tensors in spacetime of the Riemann geometry, which he had prevented Grossmann, producing the geometrization of gravity. The perfect thing for Einstein was to build a system of equations in which the impulse-energy tensor of the static gravitational field would appear, not allowed in the semi-Riemannian spacetime of the so-called general relativity, together with the impulse-energy tensor of the rest of the fields of matter, the only one present in the Einstein-Grossmann-Hilbert equations, so that the equations comply with the law of conservation of energy, maintaining gravity as a material phenomenon, as are the other fields of nature and, of another part, were the general covariant equations, not allowed in Minkowski spacetime, which he used in Entwurf theory.

In 1986, 7 decades later, Anatoly Logunov and his group of scientists, today, from the Russian Federation, achieved this, using Riemann's effective spacetime, through their identity with Minkowski's pseudo-Euclidean spacetime. But, Logunov, despite the fact that his relativistic theory of gravitation, is a gauss theory that defines gravity as a fundamental force endowed with its transmitter the virtual graviton, along with the electromagnetic, weak and strong, includes, as Einstein does, the supposed curvature of spacetime as the cause, although in the case of Einstein as the only cause and in Logunov as a complementary cause.

The author has proposed, in several of his works, that both were wrong, since the discrepancies that arose before the effects of the force of gravity according to Newton, which are astronomical in nature, are really effects external to gravity, caused by the curvature of the quantum vacuum, placed under the gravity of the stars, especially the Sun in our system, is curved -the author's hypothesis- [32], in its interaction with the electromagnetic wave and, in general, with celestial mechanics, that in the powerful Einstein-Grossmann-Hilbert equations the effect of the force of gravity was combined with that of the curvature of the quantum vacuum described only as effects of the curvature of spacetime, while in Logunov, although the effect of the force of gravity and that of the curvature of the quantum vacuum, erroneously described as the effect of the curvature of spacetime, internally in the equations, in the final calculation are combined. The author's hypothesis is that both the propagation of the electromagnetic wave in the vacuum of outer space and celestial mechanics can only be explained based on their interaction with the quantum vacuum and the force of gravity of the Newton class [33], [34], [35], [36] and [37].

Returning to the history of Einstein and Lorentz, in 1916, the so-called general relativity had been closed, because it had ended, and according to the Einstein-Grossman-Hilbert equations, the extended gravity is the curvature of spacetime, and due to the absence from its physical definition, since the fact is only operational, spacetime must be understood in terms of philosophy, in its substantial sense, because with the time the relational was excluded. The curvature of spacetime would be caused by matter, without the static gravitational field appearing in it as one of its components, consequently, it is induced that the gravitational field would be immaterial, simply a metric field, if one advances further: a field geometrodynamic, because changes in matter cause

changes in the geometry of spacetime and not the other way around as some authors propose that the geometry of spacetime by itself can change matter. In this way, spacetime itself must be understood independent of matter, not its geometry, in the same category as Newton's space. This vision of spacetime leads accurately to the Newtonian container empty space, in Einstein the spacetime as the manifold, in which the events are distributed. Therefore, at that time and since 1905, Einstein belonged to the current: the vacuum is, while Lorentz in the negationist who affirms the existence of the ether, conceived practically de-mechanized as a non-ordinary kind of matter. In 1905, Einstein had written: “The introduction of a" luminiferous ether "will be superfluous to the extent that the view developed here will not require an" absolutely stationary space "provided with special properties, nor assign a velocity vector to a point in space vacuum in which electromagnetic processes take place" [38].

According to the letter of June 17, 1916, in which Einstein responds to a letter-article by Lorentz of June 6, 1916 [39], it follows that he rejects Newtonian substantivalism and invites him to accept the ether as the g_{uv}, quantities that characterize the gravitational field, determining rules and clocks, and replacing Newton's gravitational potential scalar. Almost immediately, Einstein adopted g_{uv} = ether, under the relativistic ether, and wrote to Lorentz:

“I agree with you that the theory of general relativity admits a hypothesis of the ether as well as the theory of special relativity. But this new theory of the ether would not violate the principle of relativity. The reason is that the state g_{uv} = ether is not that of a rigid body in a state of independent motion, but rather a state of motion that is a function of the position determined by material phenomena” [40].

However, Einstein ignored the matter probably believing that Lorentz had been satisfied, and did not publish his new conception of spacetime until 1918, this time under pressure from his enemy Lenard, who as if he had known Einstein's letter of 1916, in an article [41] stated: "the objection against Einstein's general theory of relativity that in this theory the disqualified ether returned with the new name, space" [40]. Einstein, for his part also in an article [42], answered:

"While according to the special theory of relativity a part of space without matter and without electromagnetic field seems to be completely empty, that is, not characterized by physical properties, according to the general theory of relativity, even the space that is empty in this meaning, it has physical properties. These are mathematically characterized by the components of the tensor gravitational potential $g_{\mu v}$, which describe the metric behavior of this part of space, as well as its gravitational field. This state of affairs can be easily understood by speaking of an ether, the state of which varies continuously from one point to another. One only has to be careful not to attribute to this "ether" the properties of ordinary material bodies (for example, a well-defined velocity at each point)" [40].

"Einstein's new concept of the ether was born out of an exchange of letters with H. A Lorentz and his controversy with Ph[ilipp] Lenard. We could even say that Einstein was provoked to introduce, and stimulated to develop, a new relativistic concept of the ether by these two physicists. Also H. Weyl, who in 1917 presented a version of the relativistic ether similar to that of Einstein, may have inspired it to some extent" [40].

In the next two years, to the pressure that arose in 1916 for Einstein to accept the g_{uv} = ether, Weyl were added, insisting, and Sir Eddington, Einstein's main mentor, who at the eclipse of 1919, claimed

to have checked the bending forecast of the electromagnetic wave, to the extent predicted by Einstein, due to its interaction with the Sun's gravitational field, which according to Paul Marmet, a brilliant Canadian scientist, in 2001, proved impossible at the time, as he did not have the technical means to do it, because it is required to control the effect of the solar plasma, which is very strong. In his words: “This experimental result obviously does not agree with the result found in chapter ten. This is not a problem, as we will show that the deviation was certainly not measured. We will see that the effect of atmospheric turbulence was greater than the total deflection, as was the aerated disk. We will also see how the instruments could not give such a precise measurement and how the distribution of stars was not good enough for such a measurement to be convincing” [43].

Einstein lived within an elite of Nobels, he was more part of the queue of those who were going to win them, he was proposed, for the first time, in 1910, by the Nobel Prize in chemistry, Wilhelm Ostwald, for which he was convinced It would be, so much so that, in February 1919, when he separated from Mileva Maric, in the divorce agreement it was established to transfer the prize money to her when that happened [7].

In 1918, Weyl had stated that the metric field described by the g_{uv} coefficients could be called "ether" rather than gravitational field. On his part, Eddington, in 1920, developed a similar concept of "relativistic ether" [44]. Einstein must have understood that obtaining his longed-for Nobel Prize required lifting the impediment of his elusive commitment to the relativistic ether and, in his conference, in 1920, at the University of Leiden, Holland, after Eddington's writing, in the presence of Lorentz, finally Einstein presented and reintroduced the relativistic ether officially to the scientific community represented there, of course, for Lorentz a deserved triumph and for Einstein the doors were opened, with the support of Eddington, Planck, Bohr and of course Lorentz to obtain the Nobel.

In the spirit of doing justice, because there are those who reproach Poincaré for not being a Nobel surely, he was in the queue, but life did not reach him, because he died, in 1912, at 58 years of age.

5 The relativistic ether

Before special relativity, Einstein considered the ether as a great error of classical physics, since the ether was projected today as a fermionic substance. In special relativity, Einstein declared the ether superfluous.

In 1909, Einstein reaffirmed, a special framework is not required since: “the principle of relativity states that all natural laws that are maintained in a reference frame K 'that move uniformly in relation to the ether are identical to those that they are held in K, a reference frame at rest relative to ether. If so, we can also imagine that the ether is at rest relative to K ', not K. It is completely unnatural to distinguish the two reference frames K' and K by introducing an ether that is at rest into one. A satisfactory theory can only be reached if we dispense with the ether hypothesis” [45].

Within the group of articles, which Einstein wrote between 1905 [46] and 1917 [47], he progressively formulated his theory of the wave-particle duality of light completely. Thus, Einstein, in 1909, explicitly attacked the main and oldest of the three physical foundations of the ether as a carrier substrate of the electromagnetic wave, with which he obtained his second success, when he advanced that light can also be an emission of particles, supported by the equivalence between mass and energy [48], in this case a means of propagation is unnecessary. Einstein said: “We consider the ether hypothesis obsolete. Indeed: a large number of facts show without a doubt that

light has certain fundamental properties that are better explained by Newton's theory of light emission than by the theory of oscillation. For this reason, I believe that the next phase in the development of theoretical physics will bring us a theory of light that can be considered a fusion of the theories of oscillation and emission ... The foundation of the ether hypothesis is the experimentally based assumption that the ether is at rest ... then the electromagnetic fields that make up the light no longer appear as a state of a hypothetical medium, but rather as independent entities emitted by the light source, as in the emission theory of Newton of light ... the inertial mass of an object is decreased by the emission of light. The energy released was part of the mass of the object. Furthermore, it can be concluded that each absorption or release of energy brings with it an increase or decrease in the mass of the object under consideration. Energy and mass appear to be as equivalent as heat and mechanical energy ... The theory of relativity has changed our view of light. Light is not conceived as a manifestation of the state of some hypothetical medium, but rather as an independent entity like matter. Furthermore, this theory shares with the corpuscular theory of light the unusual property that light carries inertial mass from the emitting object to the absorber ... Planck's theory leads to the following conjecture. If it is really true that a radioactive resonator can only assume energy values that are multiples of hv, the obvious assumption is that the emission and absorption of light occurs only at these amounts of energy. On the basis of this hypothesis, the light quanta hypothesis, the questions posed above about the emission and absorption of light can be answered. As far as we know, the quantitative consequences of this hypothesis of light quanta are confirmed" [45].

If these antecedents are taken into account, it is understood why it was so difficult for Einstein to make public his sudden change of conception, of June 1916, introducing the relativistic ether for which 4 years passed and the strong pressure of his colleagues as notable as Weyl and Eddington so that, in the university of Leiden, sanctuary of Lorentz, as graduate, professor and Rector, he would make it official. The reasons that Einstein gave for his theory of relativistic gravitational ether was to eliminate action at a distance, actually immediate action at a distance that would work through a medium that fills space and that inertia was not the consequence of the interaction between masses as Mach had argued, since if we were in a Universe where only Newton's cube existed rotating, its water would be pushed towards its walls, because it would have spacetime as a reference as a metric field, consequently the movement is not eliminated absolute. Both the non-action at a distance and the existence of the metric field would be conducive to the fact that space has physical qualities and, as such, it would be the ether " "Einstein identified the gravitational ether with the static gravitational field and this field with the spacetime that he called the metric field ... from whom the physical properties arise" [44].

Einstein in his Leiden lecture said:

"How is it possible that, together with the idea of ponderable matter, which is derived from the abstraction of everyday life, physicists establish the idea of the existence of another type of matter, the ether? The explanation should probably be sought in those phenomena that have given rise to the theory of action at a distance ... assuming that Newtonian action at a distance is only apparently immediate action at a distance, but in truth it is transmitted by a medium that permeates space , either by movements or by elastic deformation of this medium. Thus, the effort toward a unified view of the nature of forces leads to the hypothesis of an ether ... To deny the ether is ultimately to presuppose that empty space lacks physical qualities. The fundamental facts of mechanics do not

agree with this view ... Aside from observable objects, there is something else, which is not perceptible, which must be considered real in order to allow acceleration or rotation to be considered as real ... The concept of ether has again acquired an intelligible content, although this content differs widely from the ether of the mechanical wave theory of light ... It is true that Mach tried to avoid having to accept as real something that is not observable by trying to substitute mechanically an average acceleration with reference to all the masses in the universe instead of an acceleration with reference to absolute space. But the inertial resistance opposed to the relative acceleration of distant masses presupposes action at a distance; and since the modern physicist does not believe that it can accept this action at a distance, it returns once more, if it follows Mach, to the ether, which is to serve as a medium for the effects of inertia. But this conception of the ether to which Mach's way of thinking leads us differs essentially from the ether as conceived by Newton, Fresnel, and Lorentz. Mach's ether not only conditions the behavior of inert masses, it is also conditioned in its state by them ... Mach's idea finds its full development in the ether of general relativity. According to this theory, the metric qualities of the spacetime continuum differ in the environment of different points in spacetime, and are partially conditioned by the matter that exists outside the territory under consideration.

This spatial-temporal variability of the reciprocal relations of the standards of space and time, or, perhaps, the recognition of the fact that "empty space" in its physical relation is neither homogeneous nor isotropic, which forces us to describe its ten functions (the gravitational potential g_{uv}), I think it has finally got rid of the view that space is physically empty. But with this the conception of the ether has again acquired an intelligible content, although this content differs widely from the ether of the wave-mechanical theory of light. The ether of the general theory of relativity is a medium that in itself is devoid of all mechanical and kinematic qualities, but helps to determine mechanical (and electromagnetic) events ... What is fundamentally new in the ether of theory General relativity in opposition to Lorentz's ether consists in this, that the state of the first is determined in each place by the connections with matter and the state of the ether in neighboring places, which are susceptible of law in the form of differential equations; whereas the state of the Lorentzian ether in the absence of electromagnetic fields is not conditioned by anything outside of itself, and is the same everywhere ... I believe that the ether of the general theory of relativity is the result of the Lorentzian ether, through 'relativization' ... If we consider the gravitational field and the electromagnetic field from the point of view of the ether hypothesis, we find a remarkable difference between the two. There can be no space or any part of space without gravitational potentials; for these give space its metric qualities, without which it cannot be imagined at all. The existence of the gravitational field is inextricably linked to the existence of space. On the other hand, a part of space can very well be imagined without an electromagnetic field; thus, in contrast to the gravitational field, the electromagnetic field seems to be only secondarily bound to the ether, the formal nature of the electromagnetic field is not yet determined in any way by that of the gravitational ether ... Since according to our current conceptions elementary particles of matter are also, in their essence, nothing more than condensations of the electromagnetic field, our current view of the universe presents two realities that are completely separated from each other conceptually, although causally connected, viz., the gravitational ether and the electromagnetic field, or as they could also be called space and matter ... “Recapitulating, we can say that according to the general theory of relativity, space is endowed with physical qualities; in this sense, therefore, there is an ether. Space without ether is unthinkable, since in such a space there would not only be

no propagation of light, but also no possibility of the existence of patterns of space and time (measuring rods and clocks), nor, therefore, space-time intervals in the physical sense. But this ether may not be conceived as endowed with the qualities of ponderable means, as consisting of parts that can be traced through time. The idea of motion may not apply to it" [49].

Einstein, “unlike his interpretation of general relativity of 1916, accepted that his theory of the gravitational field implied that empty space possessed physical qualities. The mechanical behavior of an object floating in empty space, such as Newton's cube, "depends not only on relative velocities, but also on its state of rotation." And this assumed that "space is endowed with physical qualities" as he bluntly admitted, this meant that Einstein was abandoning the Mach principle. Among other things, his idea that inertia was caused by the presence of all distant bodies in the universe implied that such bodies could exert an instantaneous effect on a given object, no matter how far away they were from it. But Einstein's theory of relativity did not accept instantaneous actions at a distance. Not even gravity exerted its force instantaneously, but only through certain changes in the gravitational field that obeyed the limit of the speed of light. "Inertial resistance to acceleration relative to distant masses implies action at a distance," Einstein declared. Since modern physics does not accept that of action at a distance, it goes back to the ether, which has to serve as a medium for the effects of inertia. “Initially, Einstein had enthusiastically declared that general relativity explained rotation simply as a movement relative to other objects in space, as Mach had stated” [7].

As can be seen in the statement: "Not even gravity exerted its force instantaneously, but only through certain changes in the gravitational field that obeyed the limit of the speed of light" there is a repeated error, not from Einstein but from many of its interpreters, in the understanding of extended gravity which is not a force but an effect of the curvature of spacetime, according to the revision made of the most accepted current interpretation, since for Einstein it is the effect of the gravitational potential g_{uv}, event variable an event. Now in terms of their changes, they are contingent on the changes in the configuration of matter, since this is the determinant of the curvature, or if you like, of the gravitational potential. Thus, action at a distance would imply the need for the existence of a continuous connecting medium: the ether and the speed of the distant connection would be the speed of communication of the change that occurred in the configuration of matter from a distant origin, which would be a through an ether wave. On the other hand, without support in the equations of 1916, the only ones, Einstein maintained in Leiden: “What is fundamentally new in the ether of the general theory of relativity as opposed to the Lorentz ether consists in this, that the state of the first it is determined in each place by the connections with matter and the state of the ether in neighboring places" and "the metric qualities of the continuum of spacetime differ in the environment of different points of spacetime, and are partially conditioned by the matter that exists outside of the territory under consideration”, which makes us suppose that they are equations other than those of 1915, for example, of the type of the equations of the Entwurf theory, since there is something additional in the determination of spacetime, the ether? Spacetime as ether, determining itself? In any case, in the impulse-energy tensor, T_{uv}, the ether does not appear.

6 Gravitational waves

On June 22, 1916, 5 days after Lorentz did not accept Einstein's gravity as an effect of the geometry of spacetime and did, he had, confer physical reality and introduce the so-called relativistic ether, Einstein presented the short article of 8 pages: "Approximate integration of the field equations of gravitation" to the Royal Academy of Sciences of Berlin, taking up the problem about the existence of gravitational waves that in 1913, in the Entwurf theory Max Born had asked about the speed of propagation of gravity, certainly valid as Einstein's conception of extended gravity as a material phenomenon analogous to the electromagnetic field, therefore, gravity is one of the forces existing in nature as Newton had proposed, not so in the so-called general relativity that is the effect of the locally variable gravitational potentials event by event of the geometry of spacetime, that is, d geodesic motion in general Riemann geometry.

In Entwurf theory the question was obvious: what is the propagation speed of the gravitational force? Newton had replied that it was infinite, not acceptable in the 1905 theory of special relativity, as one of his fundamental principles is the universal limit of the speed of the electromagnetic wave in vacuum: c.

Poincaré, who preceded Born to raise the problem of the speed of gravity, had proposed c, that is, although the gravitational wave different from the electromagnetic wave with equal speed, violating the principle of differentiation that is observed in nature between the magnitudes that are characteristic of qualitatively different existing phenomena. Einstein in February of that year, had considered that in gravity there would not be a gravitational wave similar to electromagnetic, but without completely ruling it out. A gravitational wave in gravity as a geodetic effect? Yes, it could be because the geodesies would not belong to the frozen universe of Parmenides but as a consequence of the dynamism of material existence they should be reconfigured in time, of course through a wave movement. Einstein had forcefully excluded the gravitational field from the material fields:

"Next, we make a distinction between <gravitational field> and <matter> in this way, that we denote everything but the gravitational field as <matter>. Our use of the word therefore includes not just matter in the ordinary sense, but the electromagnetic field so well "..." The general laws of nature must be expressed by equations that are valid for all coordinate systems, that is, that are covariant with respect to any substitution (generally covariant).

It is clear that a physical theory that satisfies this postulate will also be suitable for the general postulate of relativity. For the sum of all the substitutions includes in any case those that correspond to all the relative movements of three-dimensional coordinate systems. That this requirement of general covariance, which removes the last remnant of physical objectivity from space and time, is natural, will be seen from the following reflection. All of our space-time checks invariably amount to a determination of space-time matches. If, for example, the events consisted simply of the movement of material points, then ultimately nothing would be observable except the meeting of two or more of these points. Furthermore, the results of our measurement are nothing more than verifications of such encounters of the material points of our measuring instruments with other material points, coincidences between the hands of a clock and points on the dial of the clock, and observed point events that occur in the same place at the same time.

The introduction of a reference system has no other purpose than to facilitate the description of all such coincidences. We assign four spatial-temporal variables x_1, x_2, x_3, x_4 to the universe in such a

way that for each point event there is a corresponding system of values of the variables $x_1 ... x_4$. Two coincident punctual events correspond to a system of values of the variables $x_1 ... x_4$, that is, the coincidence is characterized by the identity of the coordinates. If, instead of the variables $x_1 ... x_4$, we introduce functions of them, x'_1, x'_2, x'_3, x'_4, as a new coordinate system, so that the value systems become to correspond with each other unambiguously, the equality of the four coordinates in the new system will also serve as an expression of the spatial-temporal coincidence of the two point events. As all our physical experience can ultimately be reduced to such coincidences, there is no immediate reason to prefer certain coordinate systems to others, that is, we arrive at the general covariance requirement" [50].

But, in June Einstein due to the influence of Lorentz, be that as it may, had changed from his purely geometric conception of February 1916 about spacetime, conferring physical properties on it and now recognizing it as the relativistic ether. In this way, if in February the gravitational wave was not clear that it existed, now in June it should exist and, so that it did not exist, a simple mental game should, like any real wave, transport energy. How, if the application of the tensors in the Riemann geometry made him renounce the static gravity supplied with energy, that is, choosing the simple geometric potentials, or worse, without gravitational wave! Einstein had had to sacrifice the tensor t_{uv}, impossible to vanish by a change of coordinates, of the gravitational field of the Entwurf theory, under the conservation of impulse-energy and angular impulse together with all other material fields, which in his time Einstein declared: "The t_{uv} characterize the energy-stress components of the gravitational field in a way analogous to the way in which T_{uv} quantities characterize those of the material process" [51]. In the Entwurf theory, Einstein and Grossmann emphasized that the gravitational field should have an energy-moment tensor like any physical field and had announced that without it "there would be unsustainable consequences" [52] and they had written: "equations have the same form: $\Delta_{\mu\nu} (\phi) = k (T_{\mu\nu} + t_{\mu\nu})$ ".

Worse still, in June, Einstein by resuming the existence of gravitational waves, in exchange for doing it within the Riemann spacetime, used in the Einstein-Grossmann-Hilbert equations, of November 1915, returned to the Minkowski spacetime of the theory Entwurf, discreetly disguised as the linearized expression of geodesic gravity. Another slip of Einstein that due to the great difficulty of operating his equations of November 1915, as if Schwarzschild did and a few others have done, he resorted to using the tensors in Minkowski spacetime as he had done when finding the solution, approximate, November 11, 1915, which gave the secular displacement of the orbit of Mercury with respect to its Newtonian orbit, since by accepting it without further ado it is a question of eating a toad, because how was it possible that without curvature Einstein made coincide astronomical calculus with a precisely curvature effect, both from the point of view of Einstein of the curvature of spacetime, and for the author really of the curvature of the quantum vacuum? Again, in June 1916, Einstein repeated it again and used the Minkowski spacetime, recommended by the Dutch physicist, mathematician and astronomer Willem De Sitter in a letter, of course, returning to the equations of the Entwurf theory. Therefore, he used the forbidden meeting of the $T_{uv} + t_{uv}$ tensors in Riemann, through the trick of linearized gravitational geodesy in Minkowski, giving materiality to the gravitational field and thus being able to search for gravitational waves that transport energy. If the static gravitational field turned out to be material then the relativistic ether was.

Einstein used the expression of the weak linearized g_{uv} gravitational field in first approximation according to De Sitter (1), which have linear orthogonal transformations, without the restrictive

coordinate condition √ − g = 1 of the 1915 field equations, because as De Sitter did not satisfy the condition of infinitely weak gravity [53], so it was based on "generally invariant field equations" and imposed the harmonic coordinate conditions on the non-linear field equations: Σ$\partial\gamma_{\mu\nu}$ ' / $\partial x_{\nu\nu}$ = 0 [54], which as gravity does not produce the approach of the particles subject to it, but their simple free fall in rectilinear trajectories, where the principle of equivalence between gravity and inertia is fulfilled, since it is a very close version of homogeneous gravity, that is, paradoxically not gravity:

g_{uv} = -δ_{uv} + y_{uv} (1)

where δ_{uv} = 1 or δ_{uv} = 0, depending on u = v or u # v, therefore, the Minkowski plane metric is represented by the special relativity system: $\delta_{\mu\nu}$ = $diag$ (−1, −1, −1, + 1). The y_{uv} are very small deviations in relation to 1, that is, from the Minkowski plane metric originally noted as $y_{uv} \approx g_{uv} - \eta_{uv}$ [55], which would propagate in it [53]. In the harmonic coordinates, Einstein calculated the y_{uv} in a way analogous to the retarded potentials in electrodynamics, with being the qualitative difference between geodesic gravity of a geometric nature brought from Riemann and electrodynamics of a material nature. “Einstein solved a linearized approximation version of his field equations because this version resembled the field equations of electromagnetism. The gravitational interaction is not transmitted instantaneously. In an analogy with electrodynamics where accelerated charges emit electromagnetic waves, Einstein concluded that gravitational fields propagate at the speed of light and that plane waves of gravity travel with the speed of light c in the plane spacetime of Minkowski” [53].

Here it is understood that Einstein using Minkowski spacetime adopted gravity as a material phenomenon and, due to the restriction of special relativity and the supposed analogy with the electromagnetic wave, the gravitational wave would propagate at the speed c. Valid deduction, if the gravitational field is assimilated to the electromagnetic field and it is omitted that although gravity is a material phenomenon like the electromagnetic one, it is physically different. But, for Einstein, "his version resembled the field equations of electromagnetism" [53].

The materiality of the gravitational field was expressly stated by Einstein in applying the linearized law of conservation:

Σ∂ ($T_{\mu\nu}$ + $t_{\mu\nu}$) / $\partial x_{\nu\nu}$ = 0,

In which the $t_{\mu\nu}$ "are the energetic components of the gravitational field" [54].

In addition, Einstein reiterated what was known from the Entwurf theory: “it must be taken into account that the choice of coordinates that has been made here has no equivalent in the general case, since the $y_{\mu\nu}$ and $y'_{\mu\nu}$ have a tensorial character only with regarding linear, orthogonal substitutions, but not under general substitutions” [54].

As Anatoli Logunov said “gravitational waves are not a corollary of general relativity” [56] and those that Einstein deals with in this article are obtained from the Entwurf theory abandoned by him, since in celestial mechanics there is a curvature effect, that when Einstein assumed it as produced by gravity, he required the Riemann spacetime manifold. On the other hand, the law of conservation of the tensor of matter, bone, the impulse-energy tensor, $T_{\mu\nu}$ + $t_{\mu\nu}$, contrary to what Einstein believed, by conferring materiality to the gravitational field, seemed to imply that radiation was not possible, since if $T_{\mu\nu}$ lost energy it would not reappear in $t_{\mu\nu}$, provided that as Einstein literally did it,

it only corresponds to the static gravitational field, which the author finds is an error since $t_{\mu\nu}$ can be done $t_{\mu\nu} = t_{\mu\nu1} + t_{\mu\nu2}$ where $t_{\mu\nu1}$ corresponds to the static gravitational field and $t_{\mu\nu2}$ to the dynamic gravitational field, that is, to the gravitational wave, keeping the conservation law. But, as established by the American physicists Robert Wald [57] and CY Lo [58] and the Chinese mathematician Yu Xin [59], the linearized conservation law implies that "two stars would not orbit each other, but instead would move over geodesics. of the flat metric", therefore, there is no gravitational radiation. Furthermore, the Einstein-Grossmann-Hilbert equations of 1915 present the problem that $t_{\mu\nu}$ is a pseudo tensor which leads to unacceptable non-localizable energy, and although in Minkowski this is not a problem, it is not exempt from having the crucial problem that the equations of Entwurf theory are not general covariates. For Einstein, as Grossmann had discovered and under Hilbert's rule, the only possible way out was to geometrize gravity and, of course, there is no gravitational radiation.

Doing what Einstein did in June, under the undoubted pressure of Lorentz, of accepting the $g_{\mu\nu}$ as relativistic ether and daringly claiming to obtain energy-carrying equations of gravitational radiation, brought him under De Sitter's contraption of linearized infinitely weak gravity, back to your Entwurf theory. Nonetheless, his June work made a career apart from him, and gravitational waves took on a life of their own. The reason is that the so-called general relativity has been a myth that has bent the world and very few have understood it.

Thus, thanks to Eddington, the ultimate architect of Einstein's glory: “Distinguished members of the Royal Geographical Society, Britain's most venerable scientific institution, joined their colleagues at the Royal Astronomical Society on the evening of November 6, 1919 at Burlington House in Piccadilly, for what they knew was probably going to be a historic event. There was only one item on the agenda, the report on the eclipse observations. The act was chaired by Sir J. J. Thomson, president of the Royal Geographical Society and discoverer of the electron. The philosopher Alfred North Whitehead had traveled from Cambridge and was in the audience, taking notes, while Isaac Newton watched them all from an imposing portrait hung in the great room. "The whole atmosphere of tense interest was exactly that of a Greek tragedy" Whitehead would note. We were the chorus commenting on the designs of destiny ... and deep-down Newton's portrait reminded us that the greatest of scientific generalizations was now going to receive, after more than two centuries, its first modification». The Astronomer Royal, Sir Frank Dyson, was honored to present the discoveries” [7].

This was the official presentation, behind Einstein's back because he was in Berlin, of the supposed confirmation of the theory of the so-called general relativity thanks to the Eddington expedition and his phenomenal effort that was imposed on the result that did not favor the other expedition from Brazil, however, due to the atmospheric conditions of the place where it took place, better than yours. “Eddington discarded the lower value, coming from Brazil, arguing that the equipment was faulty, and with some bias in favor of his own fuzzy results in Africa, he averaged just over 1.7 arc seconds, which was consistent with Einstein's predictions. This was not exactly the clearest confirmation possible, but it was enough for Eddington, and it also turned out to be valid. Later, Eddington would refer to obtaining those results as the most important moment of his life” [7].

The United Kingdom, belonging to the allies, whose nucleus constituted the nothing less powerful “Commonwealth of Nations”, founded in 1926, winners of the First World War, its subject Sir Eddington, a member of the Royal Society, also, for his glory he got away with it. “The skeptic

Silberstein, addressing Eddington, said that people thought that there were only three scientists in the world who understood general relativity, and that they had told him that one of them was Eddington. The shy Quaker was silent.

"Don't be so modest, Eddington!" Silberstein told him.

"No, nothing like that," he said. I was just wondering who the third party should be" [7].

On September 22, 1919, Lorentz sent a telegram to Einstein with the news of Eddington's confirmation of his calculation of the deflection of the electromagnetic wave when interacting with the static gravitational field, which a colleague of his had informed him. And about two weeks before the Picadilli meeting, in Westminster, London, at Lorentz's initiative: "The first unofficial announcement came at a meeting of the Royal Dutch Academy. Einstein sat proudly on the podium as Lorentz explained Eddington's findings to a dedicated audience of nearly a thousand students and scholars" [7].

Einstein's June work on gravitational waves was done in a short period of time and presented several errors of the mathematical procedure that in the end are secondary to the main thing, such as the impossibility of finding gravitational radiation from De Sitter's model of infinitely weak linearized gravity. The main mathematical error was found by Einstein himself, two years after he explained it in his article "On gravitational waves", of 1918. To derive gravitational waves he took γ' instead of γ, that is, in exchange for the frame of reference took its transformed into another frame, an error that led it to obtain six types of waves: "According to the properties of symmetry, type a corresponds to a longitudinal wave, types b and c to transverse waves, while types d, e , f correspond to a new type of wave. The types b and c do not differ in essence, but only in their orientation towards the y, z axes, as do the types d, e, f, so that there are actually three essentially different types of waves" [54], which are longitudinal and transverse gravitational waves, as well as a new type of wave that was the only one that carried energy, the other two being fictitious. This strange result of waves without energy Einstein believed was due to the equation of linearized weak gravity that De Sitter had given him, so he again restricted it with $\sqrt{-g} = 1$, which he had used in the equations of the so-called general relativity, that is, to unimodular coordinates, in which the vacuum does not gravitate, that is, precisely the opposite hypothesis to that of the author, who formulates that the quantum vacuum gravitates [32], [33] and [37].

For Einstein a crucial issue, which has not yet been understood; of course, it was not a simple matter of mathematical calculation but of physical theory itself. "Einstein concluded that, although it was not preferable to restrict the choice of coordinates for the computation of the first-order approximation, his results showed that the choice of coordinates under the constraint to a coordinate system in which $\sqrt{-g} = 1$ was physically justified", and so it was since otherwise his entire physical conception of gravitation would be wrong as it evidently is. For Einstein this condition had to be natural, that is, its source was nature itself, for which he redid the calculations. "Einstein introduced two coordinate systems: a coordinate system K, with respect to which $\sqrt{-g} = 1$ holds everywhere (the system presented in Einstein's Appendix); and the De Sitter system denoted by K '(this was the system presented in Einstein's 1916 article on gravitational waves)" [53] and obtained only the new type of real wave that carries energy, which cannot be faded by change of coordinates, eliminating from the result the others that he called apparent waves. "Einstein concluded that, consequently, unimodular coordinates exclude systems in which we find waves without energy and,

therefore, waves that do not really exist. Einstein explained to de Sitter that this meant that the first two types of waves, the longitudinal and transverse waves, obtained for the K 'system did not really exist in reality; but they were simulated by the wave movements of the coordinate system with respect to a Galilean space (in the context of a coordinate system in which √ - g = 1)" [53]. "De Sitter objected to Einstein's use of the words <real> and <apparent>. To this, Einstein replied that by <real> he meant a process that cannot be transformed in any other way. Einstein agreed not to use this terminology and to say that his coordinate system √ - g = 1 was simple or preferable, because with this choice only waves of the third type occur (one only encounters waves that carry energy). Einstein avoided classical terminology, but remained obsessed with his coordinate system √ - g = 1, which De Sitter opposed" [53]. "Einstein, still unaware of the mathematical error he had made in his 1916 paper (using γ'_{uv} instead of γ_{uv}), got caught up in the coordinate condition √ - g = 1 and the third type of gravitational wave that he had found in 1916" [53]; No, Einstein was right to fight like a "wounded lion", because it was about saving the very foundation of his scientific work on gravity.

In September and October 1917 the Finnish physicist Gunnar Nordström and later the Austrian physicist Erwin Schrödinger, Nobel Prize winner in 1933, demonstrated to the reluctant Einstein "that under the choice of the coordinate system √ - g = 1, all the energy components $t_{\sigma\nu}$ of the gravitational field vanish" [53] and, therefore, its new type of wave does not carry energy. Einstein reviewed his paper and found several miscalculations for which he accepted that they were right and, without any other option, produced his 1918 paper, a new corrected version of the 1916 one, to which Einstein as a scientist succumbed more deeply than he had expected. It had happened in front of Hilbert when he had to deliver his conception of the static gravitational field as a material field from his Entwurf theory, just as the static electromagnetic field is, and have, from now on, support gravity as a geometric phenomenon. Now, before Nordström and Schrödinger, Einstein had to surrender "the vacuum does not gravitate", but as in his surrender in front of Hilbert it would go unnoticed, since, for a positivist science what important is the measurement and the Einstein-Grossmann-Hilbert equations do they work.

Science is so positivist, that nevertheless since Newton, due to his corpuscular theory of light, the light ray was known when interacting with the Sun, it would bend even if it was only half that predicted by Einstein, but it was enough that Sir Eddington said he had verified it, so that a great shake-up would take place in his thought, aggravated by the media, as often happens continuously, by presenting to the general public that he is innocent of being the permanent target of deception, on the stage of "bread and circuses", used politically since the Roman Empire, and such supposed result was attributed to an unparalleled discovery since the light was bent, when within the true scientific context, it was only that it was bent twice, that is, it was really a quantitative difference , although important, and not qualitative between Newton and Einstein and, worse, poorly explained by him, although, unknown at that time and even today his error persists, due to because science tragically becomes political in the face of interests, which is the true core of the reigning power over humans, since as Aristotle said, man is a political animal, in the sense that man cannot be conceived outside of his own relationship with the State in its capacity as belonging to it. The scientist, as no man can get rid of this condition, nor that the product of its science is trapped in the political structure, which through the paradigms underlies power, which seeks to keep them in force forever. Einstein's relativity constitutes the current paradigm of the science of physics.

Paradigms have a life cycle. They arise from competing pre-paradigmatic theories. "To be accepted as a paradigm, a theory must appear better than its competitors, but it does not need, and in fact never does, explain all the facts with which it can be confronted" [60]. When scientists of a given science adopt a new paradigm, the previous paradigm and / or the other pre-paradigms disappear. “The paradigm transforms groups into a profession or, at least, a discipline. Hence the formation of specialized magazines, the founding of professional bodies and the claim of a special place in the academy” [61]. “The paradigm becomes normal science that updates and increases through scientific research. But no effort is made to discover abnormalities. When abnormalities do arise, they are generally dismissed or ignored. Usually the anomalies are not even noticed and no effort is made to invent a new theory (and there is no tolerance for those who try)” [61]. “The results of research for a long time are the refinement of vocabulary and concepts, the development of new technologies, the construction of complex equipment, and the conduct of high-precision experiments and sophisticated methodological observation. This professionalization leads to an immense restriction of the scientist's vision, rigid science, resistance to paradigm shift, and a detail of information and precision of observation-theory correspondence that cannot be achieved otherwise. New and refined methods and instruments result in greater precision and understanding of the paradigm” [61]. But while research based on governed paradigms is "an attempt to force nature into the preformed and relatively inflexible box that provides the paradigm" [60], and through normal science, the paradigm becomes perpetual. Paradoxically, with the long cumulative development of the paradigm, researchers may recognize that something went wrong. Consequently, anomalies appear. “There are three ways: through discovery: novelty in fact; by invention - novelty of the theory; or re-understanding the theory. Consequently, anomalies appear. The discovery begins with the awareness of the anomaly: the recognition that nature has violated the expectations induced by the paradigm that govern normal science. The recognition of anomalies results in a crisis that is a necessary condition for the emergence of a novel theory and for the paradigm shift” [61].

When crisis scientists are faced with anomalies or adopt a different attitude towards existing paradigms and thus nature, their research changes. "The proliferation of competing articulations, the willingness to try everything, the explicit discontent, the recourse to philosophy and the debate on the fundamentals, are symptoms of a transition from normal to non-ordinary research" [60]. “Theoretical alternatives are made, which may initially be speculative theories. The crisis is the essential tension implicit in scientific research. In responding to this crisis, scientists generally do not relinquish the paradigm that led to the crisis. Rather, they often devise numerous ad hoc articulations and modifications of their theory to eliminate any apparent conflicts. All crises are closed in one of these three ways. (1) Normal science proves to be able to handle the problem causing the crisis and everything returns to <normality>. (2) The problem resists and is labeled, but it is perceived as a result of the field's inability to possess the necessary tools to solve it, so scientists reserve it for a future generation with more developed tools” [61]. "A new paradigm candidate emerges and there is a battle for its acceptance" [61]. “Once it has reached paradigm status, a paradigm is declared invalid only if an alternative candidate is available to take its place. Because there is no research in the absence of a paradigm, to reject one paradigm without simultaneously substituting another is to reject science itself. The transition from a paradigm in crisis to a new one from which a new tradition of normal science emerges is not a cumulative process. It is a reconstruction of the field from new foundations. This reconstruction changes some of the

fundamental theoretical generalizations of the theory. Change methods and applications. Alter the rules" [61]. "The result is a scientific revolution that is a non-cumulative development episode in which an old paradigm is replaced in whole or in part by an incompatible new one" [61], that is, a "profound change" occurs [62]. The paradigm shift is complete when the paradigm has been adjusted so that the anomalous becomes the expected. The result is that the scientist is able to "see nature in a different way" [60]. Scientific progress occurs only through scientific revolutions. "The successive transition from one paradigm to another, via a revolution is the usual pattern of development of a mature science" [60].

Einstein revised the 1916 article producing his 1918 article "On Gravitational Waves", in which he maintained De Sitter's model of infinitely linearized gravity since "as before, I limit myself to the case in which the continuous spacetime that is being considering it deviates very little from one <<galileo>>.... $g_{\mu\nu} = -\delta_{\mu\nu} + \gamma_{\mu\nu}$", he obtained the γ_{uv} in an analogous way to the retarded potentials in electrodynamics since" the γ_{uv} can be calculated ... in the form of retarded potentials ". The speed c of propagation of the gravitational field since "the gravitational fields propagate at the speed of light", the tensor t_{uv} as the energy components of the gravitational field, because "the t_{uv} are for the gravitational field what same as T_{uv} for matter", he got rid of the unimodular coordinates definitively since the values of t_{uv} "definitely depend on the choice of coordinates, a fact that Mr. G. Nordström already pointed out to me in a letter some time ago (See also E. Schrödinger, Phys. Zeitschr). If the choice of the coordinates is made with the condition [$\sqrt{-g} = 1$], for which I previously gave the in the case of a mass point with the expressions (for indices 1 to 3), then all the components of gravitational field energies vanish", and he corrected taking the frame of reference of $\gamma'_{\mu\nu}$ in exchange for $\gamma_{\mu\nu}$, while "the error in my previous article [from 1916] was that I had used [$\gamma'_{\mu\nu}$] instead of [$\gamma_{\mu\nu}$] ", as well as the other calculation errors that it had incurred [63].

However, Einstein would again find gravitational waves without transporting energy. Now without $\sqrt{-g} = 1$ how did he eliminate them?

"Those gravitational waves that do not transport energy can, therefore, be generated from a fieldless system through a mere transformation of coordinates; its existence is (in this sense) only apparent. Real in the proper sense are, therefore, only those waves that travel along the x axis" [63]. A fieldless system has a flat Minkowski metric, that is, a system that does not gravitate. Then the real gravitational waves that transport energy come from systems that lose energy, that is, according to Einstein, that at some point they lack spherical symmetry due to "the loss of energy (per unit time) of the mechanical system due to gravitational waves" [63], since according to Einstein's mathematical calculations "a mechanical system that permanently preserves spherical symmetry cannot radiate" [63]. How convinced was Einstein about his alleged finding of real gravitational waves? Uncertain since he warns: "It has already been pointed out in a previous article that the final result of this research - which would require a loss of energy from the bodies due to thermal agitation - should raise doubts about the general validity of the theory. It seems that a more complete quantum theory should also provoke a modification of the theory of gravitation" [63].

For their part, Lorentz and none other than Levi-Civita objected to the equations for the conservation of energy of matter and the gravitational field taken together presented by Einstein, making him see that they were not tensorial. Einstein responded surprisingly: "Mr. Levi-Civita (and before him, with less emphasis, already HA Lorentz) has suggested a formulation of the [energy] conservation theorems that deviates from [Einstein's equations of conservation of the energy of

matter and the gravitational field taken together]. He (and with him other colleagues) opposes the emphasis of [Einstein's equations of conservation of energy of matter and the gravitational field taken together], and also the above interpretation because they do not form a tensor. The latter is easily granted; but I do not understand why physical meaning should only be given to quantities with the transformation characteristics of the tensor component" [63]. It is clear that Einstein was aware of this, and yet he stubbornly claimed that even violating the integrity of his application of the absolute differential calculus in his work, physical meaning be accepted to his results.

Historian Galina Weinstein of the University of Haifa, Israel, wrote: "In his 1918 article on gravitational waves, Einstein wrote the quadrupole formula that describes the rate of energy loss due to the emission of gravitational waves from a binary mechanical system.

In correcting the 1916 paper, Einstein discovered that a source that emits gravitational waves slowly loses the energy carried by these waves. Although in electromagnetism the waves are emitted by a dipole source, in general relativity a dipolar source is prohibited as it is also in gravitation, in accordance with the law of conservation of moment, and therefore gravitational waves cannot be emitted by dipoles but by quadrupoles. Einstein's quadrupole formula gives the result:

$4\pi r2t4r$ = 16/5 $I2\omega6$

I represents the quadrupole moment tensor, whose components are the components of the moment of inertia of the binary system radiating gravitational waves, $4\pi r^2 t^4 r$ is the rate of energy loss due to gravitational waves and $t^4 r$ (along the radius / radial component) is the energetic component of the gravitational field. A binary system consists of two bodies at a distance. The orbits are elliptical and remain on the plane. The binary system loses energy when emitting radiation, the orbital angular frequency ω increases and the distance [r] between the two bodies decreases" [53].

However, in the 1918 article, Einstein did not explicitly formulate the existence of quadrupole gravitational waves, nor did he give his radiation formula as it is currently presented in various versions, for example, another is that of the Massachusetts Institute of Technology:

"This is significant only on distance scales of at least one wavelength, and when integrated into a large sphere (and taking into account unmentioned better terms like projection tensors), we have

dE / dt = 1/5 G / c^5 <Ïij Ï ij>

which is the quadrupole formula for the energy transported by gravitational waves" [64].

In any case, it is important to bear in mind that:

"General relativity describes waves with a matrix because gravity is geometry and the effects of gravity are represented by stretching of spacetime. This matrix contains this distortion information" [65].

For the rest, Einstein's work ignored, unjustifiably because he knew it, that both from an energy-impulse pseudo tensor corresponding to the static gravitational field of the Einstein-Grossmann-Hilbert equations and in a Minkowski spacetime there is no radiation of gravitational waves, due in Riemann to the non-existence of localizable energy and in Minkowski to the fact that their geodesics are rectilinear. While in the presentations Einstein was based on Riemann, on the other hand, in the applications he used Minkowski, obtaining approximate solutions, due to the complexity of the

Einstein-Grossmann-Hilbert equations and their great difficulty in finding exact solutions, which have only been achieved very few.

In 1922, Eddington in his article "The Propagation of Gravitational Waves" showed that the Minkowski plane coordinate system, with the presence of very small disturbances, was itself a "wavy" system and therefore the first two of the three types of waves, named by Weyl as longitudinal-longitudinal, transverse-longitudinal, and transverse-transverse, were not so at all but simply flat space viewed from a wavy coordinate system. But he did not rule out the third type of wave that he did show propagated at speed c in all coordinate systems [66].

7 Gravitational waves don't exist

When Lorentz died in February 1928, his influence in the scientific community gradually disappeared and with his exodus to the United States, Einstein finally found himself free to return to the themes of relativistic ether and gravitational waves that he attended in the reverse order they were entered.

In 1936, Einstein along with his assistant Rosen, at the time they were separated since he was traveling to the then USSR, took the opportunity to present an article, the third between them, of great impact where they denied the existence of the gravitational waves. A little earlier, Einstein had written to Max Born announcing that with Rosen, they had found by means of an exact solution of his equations of 1915, that gravitational waves did not exist, although a certainty was assumed in the first approximation of the linear model. "Einstein concluded that this showed that nonlinear general relativistic field equations could tell us more or rather more limiting us than we had previously believed (Einstein to Born, 1936, Letter 71, undated)" [67].

On June 1, 1936, the article "Are there gravitational waves?", The original of which does not exist today, was sent to the Physical Review, whose editor was John T. Tate, and where the other two had been published without review them, they had written together. But this time “The editor of Physical Review sent the manuscript to Howard Percy Robertson, who carefully examined it and made several negative comments. John Tate, in turn, wrote to Einstein on July 23 asking him to respond to the critic's comments. Einstein's reaction was anger and outrage; he sent the following note to Tate” [67:

“July 27, 1936

Dear Sir.

We (Mr. Rosen and I) had sent our manuscript to him for publication and we had not authorized him to show it to specialists before it was printed. I see no reason to address the comments, in any case, erroneous, from your anonymous expert. Based on this incident, I prefer to publish the article elsewhere.

Respectfully

Einstein

PS Mr. Rosen, who has gone to the Soviet Union, has authorized me to represent him in this matter” [66].

On July 30, John Tate responded to Einstein that he greatly regretted the withdrawal of the article, saying "I could not accept, for publication in The Physical Review an article that the author was unwilling to show to our Editorial Board prior to publication" [66].

It should be noted that the reviewer pair was anonymous, as is the rule, and Einstein did not know who this character was, who turned out to be a very influential American mathematician and physicist, a Caltech graduate, a professor at Princenton University, a place that did not he was a supporter of Einstein, because there was an anti-Semitic current there.

Einstein quite successful in managing social interrelation, this time he failed, as can be seen, which caused him, as often happens when he challenges and makes someone with power angry, that they organize the respective retaliation, in which he had there must have been the participation of some of his colleagues from the Institute, who, as we must insist, was totally alien to Princeton University, but not to the power structures. Thus, Infeld, who had just arrived from Poland, in search of a great future at the Institute, which he partly achieved as he went down in history, alongside his ethnic countryman, the famous Einstein, as his assistant, in Rosen's replacement. On the same day he introduced himself to him, who in a generous gesture of appreciation and trust gave him his article, Infeld results incredibly friend of Robertson, worse, showing it to him right away. Infeld agreed with the mathematical error that Robertson, from his restricted vision, had encountered earlier, whose anonymous intrusion had angered Einstein so much that by taking into account these facts, to which Tate should not have been indifferent, Einstein never sent again his papers to Physical Review.

Days later, Infeld acting as Robertson's messenger, appeared before Einstein to tell him that they had found the sounded error, who anticipated his treacherous mission, either because he was warned or on his own account he discovered the roguery, and told him that he had found an error in his article. Is this why Infeld did not had salary at the Institute or was it because the assistants did not have it, although Walther Mayer did?

Infeld participated in the mafia punishment meted out to Einstein. The sheaf usually, who did not want one, is given two as a lesson, in this case his article was twice subjected to Robertson's scrutiny and to his full rejoicing, making gala of his power, he acts not as anonymous but sending him with whom he was going to be his assistant, his rude missive. Well, as Einstein correctly warned Tate, when he did not know who his reviewer was, and what his error, he should not know the context and that is, that is, the geometric conception of gravity, unfortunately a consequence of his 1915 equations, that it should have been the true source of his critics and the reason for the non-existence of gravitational waves that Einstein presented in his article, but not a crass mathematical error as was the one that Robertson could find, than if it had been corrected within the context properly, it should have confirmed Einstein's result and not put it off, which was ultimately what Robertson achieved. The mathematical error originated from the very difficult handling of the absolute differential calculus, which was not exactly the talent of Einstein as it was of Grossmann and Hilbert, moreover, given their quality as professional mathematicians.

On the same day that Infeld arrived at the Institute, “Einstein asked Infeld to accompany him home, where he would deliver the manuscript of his article. On the way they talked about physics. Einstein spoke on the subject of gravitational waves, to which they returned many times in their later conversations. Infeld went home with the manuscript of Einstein and Rosen's article.

Infeld was skeptical of the latter result. Although he admired Einstein as the world's greatest scientist, he still trusted his own brain more than his admiration for Einstein; and he couldn't accept the non-existence of gravitational waves. His own intuition did not allow him to dogmatically accept this last result" [67].

In his autobiography, Infeld describes his first encounter with Einstein, in which Einstein explained his proof for the absence of gravitational waves. Einstein began to talk about his latest article, still unpublished, about the work done with his assistant Rosen during the previous year. It was the problem of gravitational waves. Infeld explains the basic idea in simple words as follows (Infeld 1941, 260-261): "General relativity is a field theory, and it does for the problem of gravitation what Maxwell's theory had done for the problem of electromagnetic phenomena. For this reason, gravitational waves can be deduced from general relativity in the same way that the existence of electromagnetic waves can be deduced from Maxwell's theory. In their motion, stars send out gravitational waves, which spread out in time through space, just as oscillating electrons send out electromagnetic waves. It is a common characteristic of all field theories that the influence of one object on another propagates through space with a great but finite speed in the form of waves" [67]. It is evident that neither Infeld nor Robertson, coinciding in the previous reflection, distinguished between the field of material nature of Maxwell's theory and the metric field of the Einstein-Grossmann-Hilbert equations. Both Infeld and Robertson were daring beginners to Einstein.

"The same day that Infeld had his talk with Einstein, he met Robertson, of whose work on general relativity and cosmology he was well aware. Robertson was a professor of theoretical physics at Princeton who had just returned from a sabbatical at Caltech. Infeld told Robertson about Einstein's new gravitational wave paper that Einstein had given him to read and that he hadn't finished reading, but he felt the result still struck him as strange. Robertson immediately exclaimed that he didn't believe in the result either and said that there must be a mistake somewhere in Einstein's article. Gravitational waves exist. He was sure of this. Infeld agreed with Robertson's judgment and they continued their discussion for a long time in Robertson's office.

Infeld carefully studied Einstein's gravitational wave paper after meeting with Robertson and was very impressed with this manuscript which led to the conclusion that gravitational waves do not exist. It would seem that, in the long run, Infeld still trusted his admiration for Einstein more than anything else.

After Infeld spoke to Einstein again, he met with Robertson the next day and told him that he had become convinced that gravitational waves do not exist. Infeld was even convinced that he could prove it, but Robertson scrapped the idea. He took the two pages Infeld wrote his idea on, checked every step of the plot, and claimed there must be an error in his calculations. In fact, he ran into a trivial mistake: Infeld had put a minus instead of a plus. Infeld discussed gravitational waves more with Robertson and these discussions convinced him that gravitational waves do exist. But if that's true, there must be a mistake in Einstein's article after all.

At their next meeting, Robertson clarified to Infeld the error in Einstein's explanation of gravitational waves: the linearized approximation actually leads to flat transverse gravitational waves. However, you cannot describe gravitational waves exactly without introducing singularities in the components of the metric that describes the wave, but these singularities are coordinate singularities and not

actual singularities. However, these singularities can be dealt with by a change of coordinates. Robertson, therefore, suggested performing a "trick." He suggested that the so-called Einstein-Rosen metric (from Einstein and Rosen's paper) be transformed from space-time coordinates, suitable for representing plane gravitational waves, to cylindrical coordinates. The singularity can be located at the origin of the cylindrical axis, where one would expect to find the source of the cylindrical waves; in this way, the singularity can be considered as a description of a material source. The solution obtained can be considered to describe cylindrical gravitational waves instead of flat gravitational waves.

The next day, Infeld went to see Einstein and told him that he (Infeld) had found an error in the calculation and that he believed that gravitational waves do exist. Einstein replied that he too had found an error in his article with Rosen" [67].

Robertson's argument that by locating the singularity at the origin of the cylindrical coordinate axis can be considered as a description of a material source lacks a referent within the Einstein-Grossmann-Hilbert equations since the static gravitational field is the simple curvature of the spacetime and the material source of the gravitational waves would have to be this field, which is not material but geometric, although the source of this curvature is material, and which cannot replace the static gravitational field as a direct generator of the gravitational wave.

However, Einstein agreed to change his article "On gravitational waves" [68] as suggested by Robertson and in recognition thanked him, which he had sent without modifications to the "Journal of the Franklin Institute" and at that time, without revision, It was ready for printing, which in principle is disconcerting, but, which reminds Ehrenfest of the recommended strategy, which gave him good results, when he faced determinations of some source of power, which he had to accept, although seeking out temporarily.

"The new version of the paper was re-titled" On Gravitational Waves, "and following Robertson's suggestion of a transformation to cylindrical coordinates, Einstein obtained exact cylindrical wave solutions of the field equations of general relativity. The metric of these waves satisfied three exact equations, the first of which, a linear equation, represented cylindrical waves in three-dimensional Euclidean space (the field is independent of x_4). Therefore, Einstein presented cylindrical waves that are locally equal to plane waves (Einstein and Rosen 1937, 52-53).

Einstein concluded his article by saying that a traveling wave can be represented to a good approximation by a quantity that cannot disappear and that it always has the same sign. Therefore, traveling waves produce a secular change in metric. This is related to the fact that waves carry energy, which is linked to a systematic change in time of a gravitational mass (in effect, a source of gravitational waves) located on the axis (origin) $x = 0$. Einstein, therefore, represented matter (the source of gravitational waves) by field singularities (Einstein and Rosen 1937, 54).

This is the version that finally appeared in the Journal of the Franklin Institute in 1937" [67].

"Einstein sent a letter to the editor on November 13, 1936, explaining the reasons why he had to make fundamental changes to the galleys"… "Tellingly, the new conclusions from his rewritten article said:

A rigorous solution for cylindrical gravitational waves is provided. For the convenience of the reader, the theory of gravitational waves and their production, known in principle, is presented in the first part of this article. After finding relationships that cast doubt on the existence of gravitational fields with rigorous waveform solutions, we have thoroughly investigated the case of cylindrical gravitational waves. As a result, there are strict solutions and the problem boils down to conventional cylindrical waves in Euclidean space".

Additionally, Einstein included this explanatory note at the end of his article,

Note: The second part of this article was considerably altered by me after Mr. Rosen's departure for Russia, as we had misinterpreted the results of our formula. I want to thank my colleague, Professor Robertson, for his kind help in clearing up the original error. I also thank Mr. Hoffmann for his kind help in the translation" [66].

A year later, in 1938, Einstein perhaps when he was able to get rid of Robertson, his powerful rival and once he had the loyalty of Infeld could finally get rid of gravitational waves, in front of the demanding scientific community, through his writing "The equations Gravitational Problems and the Problem of Motion ", which was received by "Annals of Matematics" on June 16, 1917 and published in Volume 39, January 1, 1938, performed with the English physicist, mathematician Banesh Hoffmann and Infeld. Despite the magnificent trio of scientists who worked on the subject, they did not look for an exact solution and continued using Sitter's model of empty space, where matter is treated as singularities, although adopting the nomenclature that is common today:

$g_{uv} = \eta_{uv} + h_{uv}$

hence the flat Minkowski spacetime in wavy coordinates. They wrote in the introduction to his work:

"What relativistic equations of gravitation determine the motion of ponderable bodies?

At present the only existing equations are those of empty space and it must be known if they alone determine the motion of bodies. In classical physics there are examples for and against. Maxwell's equations for empty space, in which electric particles are considered point singularities of the field, the motion of these singularities is not determined by the linear equations of the field.

In this work it is shown that the gravitation equations for empty space are sufficient to determine the motion of matter represented as point singularities of the field. The gravitation equations are non-linear and due to the necessary freedom of choice of the coordinate system, they are such that 4 differential relationships exist between them so that they form an over certain system of equations. Overdetermination is responsible for the existence of equations of motion and the non-linear character for the existence of terms expressing the interaction of bodies in motion.

Two essential steps guide for determining movement.

1. By means of a new approximation method especially suitable for the treatment of semi-stationary fields, the gravitational field due to moving bodies is determined.

2. It is shown that for 2-dimensional spatial surfaces containing singularities certain integral surface conditions are valid that determine the motion.

In the second part we calculate the two non-trivial stages of the approximation. In the first of these the equations of motion take Newtonian form. In the second, the equations of motion for two massive bodies take a more complicated form but do not involve third or higher derivatives with respect to time.

In determining the field and the equations of motion non-Galilean values at infinity and singularities of the type of dipoles, quadrupoles and higher poles, must be excluded from the field for the solution to be unique. It is important that our equations of motion do not constrain the motion of singularities more strongly than Newtonian equations, but this may be due to our simplifying assumption that matter is represented by singularities, and it may not be the case if we could represent matter in terms of a field theory from which singularities are excluded.

The representation of matter by means of singularities does not allow the field equations to fix the sign of the mass, so that, as far as the present theory is concerned, it is only by convention that the interaction between two bodies is always an attraction. and not a repulsion. Possible clues as to why mass can be positive can only be expected from the theory that gives a singularity-free representation of matter.

Our method can be applied to the case where the Maxwell energy-moment tensor is included in the field equations and, as shown in Part II, leads to a derivation of the Lorentz force.

In Maxwell-Lorentz electrodynamics, as well as in the previous approximation method for the solution of gravitational equations, the problem of determining the field due to moving bodies is solved by integrating the wave equation by retarded potentials. The sign of the flow of time there plays a decisive role since, in a sense, the field expands in terms only of these waves advancing towards infinity. In our theory, however, the equations to be solved at each stage of the approximation are not wave equations but simply equations of spatial potential, since equations such as those of the gravitational and electromagnetic field are actually invariant under an inversion of the sign of time. It would seem that the method present here is the natural one for its solution. Our method, in which the direction of time is not distinguished, corresponds to the introduction of standing waves in the wave equation and cannot lead to the conclusion that in the circular motion of two-point masses the energy radiates to infinity in waveform" [69].

It is evident that in an empty space there are no quadrupole material structures, since they cannot exist because they are created by a strong gravitational field, which would produce quadrupole waves, for which reason they are excluded for that reason alone, but also, unlike the field electromagnetic field where the field expands in waves that advance towards infinity, being a material field, in the case of a geometric field, such as gravitational, the equations are not wave but equations of the space potential and, finally, in the circular motion of two point masses, which in no way corresponds to their geodesic motion, as Wald made very clear, there is no radiation of energy, and consequently gravitational waves. At the end of the article, thanks are given to Robertson for having carried out the integration of the equations that give the relativistic motion of two massive gravitating bodies found by them, that is, for having carried out a lesser task that could well have been carried out a gifted student, on the other hand, Robertson had to tacitly accept that there were no gravitational waves, which is of great significance considering his famous cylindrical gravitational waves. Thus, Einstein elegantly put Robertson in his place and incidentally to the

University of Princenton since after the previous recognition he signed it: "The Institute for Advanced Study".

Weinstein in a broader context adds:

“In 1938, Einstein, Infeld, and Banesh Hoffmann wanted to create a unified field theory that encompassed both gravity and electromagnetism. The problem was that Maxwell's ordinary equations for empty space were linear field equations, in which electrical particles were considered as point singularities of the field. However, the motion of these singularities was not determined by these linear field equations. Furthermore, the vacuum field equations of general relativity were not linear and determined the motion of material points represented as singularities in the field.

There are three possible approaches when tackling the task of solving Einstein's field equations: the gravitational field is weak, it is static, and material particles move slowly. In 1916 and 1918, Einstein considered the gravitational field to be weak and, like the equations of electromagnetism, linear. This approximation does not limit the acceleration of material particles and, in fact, points of accelerated material produce gravitational waves.

In 1938, Einstein proposed a new approximation method for determining the gravitational field of a moving particle: he chose a weak field approximation and considered very low accelerations. In the 1938 article with Infeld and Hoffmann, Einstein considered the weak field approximation and put a limit on the acceleration of material particles. This is called a post-Newtonian approximation.

Einstein with his assistants, Infeld and Hoffmann, calculated the first two stages of this approximation and found that in the first stage the equations of motion take Newtonian form (Einstein, Infeld, and Hoffmann 1938, 65-66). In this approximation, if we consider very low accelerations, then the exact equations of motion take Newtonian form and we obtain a material particle that cannot radiate. In this state of affairs, we have revived the old assumption that there could be no gravitational waves” [67].

8 Einstein terminated the relativistic ether

Between 1916 and 1934, Einstein claimed that, for physical reasons, gravity, spacetime is the geometric static gravitational field which in turn is determined by physical factors. Of course, there would be a symmetric relationship between geometry and physics, since for physical reasons geometry arises and from its physical properties arise. Regarding the relationship, in the sense of physics to geometry, Einstein, in 1934, in transit to abandon the relativistic ether, wrote: “On physical bases it was assumed that the metric field was at the same time the gravitational field ... Since the gravitational field is determined by the configuration of masses and changes with it, the geometry of the structure of this space also depends on physical factors ... Since the gravitational field is determined by the configuration of masses and changes with it, the geometric structure of this space also depends on physical factors. Therefore, according to this theory, space is exactly as Riemann assumed since it is no longer absolute; its structure depends on physical influences. Geometry (physics) is no longer an isolated and autonomous science like Euclid's geometry” [70].

In 1938, Einstein formalized the change in his concept of gravity as ether, and wrote: “This is the time to completely forget the ether and try never to mention its name. We will say: our space has the physical property of transmitting waves, so we omit the use of a word that we have decided to

avoid" [71]. Although it could be interpreted, this statement, as a methodological high to return to the ether with definitive arguments, in reality it was said absolutely with the aim of abandoning such a concept, since that is how it happened. In effect, the concept of ether was changed by the concept of field, and thus ether disappeared from normal science.

In 1954, near his death, Einstein returned to his original thesis relational of spacetime has no independent existence of the field (matter-energy?). He specified that the gravitational field are the g_{uv} functions, that is, geometric and causal relationships between events (such as distance, volume, curvature, angle, present, past and future) which leads to think that spacetime is a structural property of a geometric field such as the relationships between events that are the really existing ones. However, Einstein had during large time adopt the thesis of the Substantialism of the spacetime as vacuum due to the solutions of his equations for the empties space. As such solutions cannot be eliminated, the only possibility to understand philosophically the Einstein-Grossmann-Hilbert equations, once Norton-Earman reestablished the hole argument, is from the Sophisticated Substantialism linking the manifold with g_{uv}, that is (M, g).

Spacetime, consistent with general relativity, confirmed is the static gravitational field, a geometric field, since Einstein declared: "To be able to describe at all that which fills space and is dependent on coordinates, spacetime or the inertial system with its metric properties must immediately be considered as existing, because otherwise the description of "that which fills the space" would have no meaning. On the basis of the general theory of relativity, on the other hand, space, as opposed to "that which fills space," which depends on coordinates, has no separate existence. Thus, a pure gravitational field could have been described in terms of g_{uv} (as functions of the coordinates), by solving the gravitational equations. If we imagine that the gravitational field, that is, the g_{uv} functions, are eliminated, there is no space of type (1) (type 1 is Minkowski spacetime), but absolutely nothing, and no "topological space". The g_{uv} functions describe not only the field, but at the same time also the topological and metric structural properties of the manifold ... A space of the type (1), judged from the point of view of the general theory of relativity, is not a space. no field, but a special case of the g_{uv} field, for which, for the coordinate system used, which itself has no objective meaning, the g_{uv} functions have values that do not depend on the coordinates. There is no such thing as an empty space, that is, a space without a field ... Spacetime does not claim existence by itself, but only as a structural quality of the field ... there is no "field empty" space [72]. But, since in a vacuum "what fills the space" is the metric field, there is space only as a metric field, that is, nothing.

Einstein, in 1938, at age 59, after imposing himself on Robertson and ending gravitational waves, too, does so with relativistic ether, his 1916 concession to Lorentz. In Hegelian terms, Einstein has achieved the peak of being by reaching "being in and for himself."

Conclusion

Scientific production with being that it is the production with the highest added value, in front of all productions, it degrades as much as the others, it is over determined by the economic-social structure, in the particularities of the Nation-States of contemporary formation, through the action of the policy that it imposes on it, it seeks to freeze, against democratic progress, the existing unequal relations created between men. In science it translates into the rule of normal science that, in general, is part of normal thought, which relies on the mafia action of the sheaf than those who,

in particular, in the performance of the scientific office, the noblest and exalting, within the constellation of all jobs, it oppresses and reduces them in the scope of the greatest possible benefit for humanity. It is true that such oppression is exercised in all jobs, and universally in front of life and the executioners, lackeys of the dominant power, it could be affirmed that they are not good human beings, since if they are out of ignorance, this does not save them. Einstein at the zenith of his prodigious creation was able to stylishly put them in their place. Bravo Albert Einstein!

Referencies

[0] Guillén Gómez, Alfonso León. (1969). Una velocidad mayor que la de la luz: Semanario dominical del periódico "El Siglo", Bogotá, 14 de diciembre, página 2

Guillén Gómez, Alfonso León. (1970). La substancia y el campo: Semanario dominical del periódico "El Siglo", Bogotá, 11 de enero, página 7

Guillén Gómez, Alfonso León. (1970). Lo que actualmente se sabe sobre la gravedad: Semanario dominical del periódico "El Siglo", Bogotá, 1 de febrero, página 2

Guillén Gómez, Alfonso León. (1970). La velocidad de la gravedad: Semanario dominical del periódico "El Siglo", Bogotá, 8 de febrero, página 7

[1] Fernández Fernández, José Luis. (2013). Los judíos y el origen del sistema financiero internacional. Escuela Diplomática de Madrid. Transcripción casi textual –llevada a cabo por María de Miguel- de la conferencia impartida por el autor bajo el título de: "La banca, las finanzas y el pueblo judío".

[2] Montagut Contreras, Eduardo. (2014). Los judíos en el siglo 19. Revista los ojos de Hipatia. Valencia. España.

[3] Wikipedia.

[4] Comité Democrático Palestino. (2012). Carta de Einstein. Chile.

[5] Trkovska, D. (2007). Felix Klein and his Erlanger Programm: WDS'07 Proceedings of Contributed Papers, Part I, 251–256

[6] Antonio Moreno González. (2005). Albert Einstein. http://dipc.ehu.es/digitalak/orriak/castellano/princeton.html

[7] Isaacson Walter. (2007). Einstein su vida y su universo. Preparado por Patricio Barros.

[8] Cervantes Castro, Jorge. (2011). Albert Einstein y su aneurisma de la aorta. Gaceta Médica de México.

[9] Gavaldà, Josep. (2020). El robo del cerebro de Einstein. National Geographic.

[10] Einstein, Albert. (1905). Zur Elektrodynamik bewegter Krper, Annalen der Physik, 17 Pg 891-921.

[11] Kostro, Ludwik. (2004). Albert Einstein's new ether and his General Relativity: Balkan Society of Geometers, Geometry Balkan Press

[12] Diéguez Lucena, Antonio. (2019). Realismo científico: SEFA, España.

[13] Aristotle. (1930). Physics. Book IV. Works of Aristotle v. 2,Tr Hardie R.P. and Gaye: R.K. W.D. Ross, ed. (Oxford: Clarendon Press)

[14] Descartes, R. (1969). The Essential Descartes: Edited by Margaret D. Wilson, Mentor Books

[15] Gower, B. (2002). Scientific Method: Taylor & Francis e-Library

[16] Jousten, K. (2008). The History of Vacuum Science and Vacuum Technology: Wiley-VCH

[17] Newton I. (1729). The Mathematical Principles of Natural Philosophy: Philosophy Archive marxists.org

[18] Newton, I. (1730). Opticks: Dover Publications, INC

[19] Ranzan, C. (2010). The history of the ether theory: CellularUniverse.org

[20] Eddington, A. (1938). The philosophy of physical science: Tarner Lectures

[21] Dannon, V. (2011). The Meaning of the Michelson-Morley Experiment

[22] Maxwell, J C. (1875) "Ether", Encyclopedia Britannica, 9 th, Edition, Vol VIII, p. 568-572.

[23] Stokes, G. (1845). On the Aberration of Light: Philosophical Magazine, Volume 27, 9–15

[24] Haldane, A. (2011). A History of ether: Rutgers SSPAR

[25] Cassini, Alejandro y Levinas, Marcelo. (2009). ¿Revolución en la física del éter o cambio conceptual gradual? La desmecanización del éter de Maxwell a Einstein: Epistemología e historia de la ciencia, Volumen 15, Universidad Nacional de Córdoba, Argentina

[26] Lorentz, H. A. (1916). The Theory of Electrons and its Applications to the Phenomena of Light and Radiant Heat Second Edition, Leipzig: Teubner

[27] Einstein, A. (1936). Physics and reality: Hosted by Professor Milivoje M. Kostic

[28] Einstein, A and Infeld L. (1938). The Evolution of Physics: The Growth of Ideas from Early Concepts to Relativity and Quanta, Osmania University

[29] Ranzan, Conrad. (2019). The History of the Ether Theory: Cellular Universe website

[30] Lodge, O. (1889) Moderns Views of Electricity. London-New York: Macmillan.

[31] Einstein, Albert y Infeld, Leopold. (1974). La física Aventura del pensamiento: Editorial Lozada, Argentina

[32] Guillen, Alfonso. (2018). Are dark matter and dark energy opposite effects of the quantum vacuum?: Hosted by ResearchGate and PhilPapers.

[33] Guillen, Alfonso. (2006). La gravedad si es una fuerza: Almacenado en ResearchGate.

[34] Guillen, Alfonso. (2020). La teoría relativista de la gravitación superior que la relatividad general: Almacenado en ResearchGate y PhilPapers.

[35] Guillen, Alfonso. (2006). Gravity is a quantum force: Hosted by ResearchGate.

[36] Guillen, Alfonso. (2020). The relativistic theory of gravitation beyond general relativity: Hosted by ResearchGate and PhilPapers.

[37] Guillen, Alfonso. (2019). What is gravity?: Hosted by ResearchGate and PhilPapers.

[38] Einstein, Albert. (1905). Zur Elektrodynamik bewegter Krper: Annalen der Physik, 17

[39] Lorentz, Hendrik. (1916). Letter to A. Einstein, 6.06.1916, Einstein Archives, 16-451.

[40] Kostro, Ludwik. (2004). Albert Einstein's new ether and his general relativity: Balkan Society of Geometers, Geometry Balkan Press.

[41] Lenard, Philipp. (1918). Uber Relativittsprinzip, Ather, Gravitation, Jahrbuch der Radioaktivitt und Elektronik 15.

[42] Einstein, Albert. (1918). Dialog uber Einwande gegen die Relativitatstheorie: Die Naturwissenschaften, 6.

[43] Marmet, Paul. (1997). Einstein's Theory of Relativity versus Classical Mechanics. Appendix II. The Deflection of Light by the Sun's Gravitational Field: An Analysis of the 1919 Solar Eclipse Expeditions.

[44] Cassini, Alejandro y Levinas, Marcelo. (2009). El éter relativista: un cambio conceptual inconcluso: CRÍTICA, Revista Hispanoamericana de Filosofía. Vol. 41, No. 123

[45] Einstein, Albert. (1909). On the Development of Our Views Concerning the Nature and Constitution of Radiation: The information Philosopher

[46] Einstein, Albert. (1905). On a Heuristic Point of View Concerning the Production and Transformation of Light: American Journal of Physics, v. 33, n. 5

[47] Einstein, Albert. (1905). Does the inertia of a body depend upon its energy content?: Collection of the Annus Mirabilis papers

[48] Einstein, Albert. (1917). On the Quantum Theory of Radiation: The information Philosopher

[49] Einstein, Albert. (1920). Ether and the Theory of Relativity: Methuen & Co. Ltd, London

[50] Einstein, Albert. (1916). The Foundation of the General Theory of Relativity: Annalen der Physik 49: 769-822

[51] Einstein, Albert. (1914). Physical Foundations of a Theory on Gravitation: Naturforschende Gesellschaft in Zürich. Vierteljahrsschrift 58, 284-290

[52] Einstein Albert and Grossmann Marcel. (1913). Outline of a generalized theory of the Relativity and of a theory of gravitation.

[53] Weinstein, Galina. (2016). Einstein's Discovery of Gravitational Waves 1916-1918: arXiv:1602.04040

[54] Einstein, Albert. (1916). Approximate integration of the field equations of gravitation: Volume 6: The Berlin Years: Writings, 1914-1917

[55] Lo, C. Y. (1995). Einstein´s radiation formula and modifications to the Einstein equation: The astrophysical journal, 455

[56] Logunov, A. and Mestvirishvili, M. (1989). The Relativistic Theory of Gravitation: Mir Publishers, Moscow

[57] Wald, Robert. (1984). General Relativity: The Univ. of Chicago Press

[58] Lo, C. Y. (1994). Space, time, motion, and general relativity

[59] Xin, Yu. (1992). Astrophysics and Space Science

[60] Kunt, T. (1996) The Structure of Scientific Revolution: The University of Chicago Press, Chicago.

[61] Pajares, F. (2012) Thomas Kuhn's Structure of Scientific Revolutions: A Synopsis from the Original. http://stripe.colorado.edu/~yulsman/paradigms.pdf

[62] Bachelard, G. (2010) La formación del espíritu científico. Contribución a un psicoanálisis del conocimiento objetivo: Siglo XXI, Buenos Aires.

[63] Einstein, Albert. (1918). On gravitational waves: Volume 7: The Berlin Years: Writings, 1918-1921

[64] Crossfield, Ian J. M. (2019). 5 Gravitational Waves: MIT, www.mit.edu > ~ iancross > lec005

[65] Schutz, Bernard F. (2000). Gravitational Radiation: Max Planck Institute for Gravitational Physics

[66] Cervantes-Cota, Jorge L, Galindo-Uribarri, Salvador and Smoot, George F. (2016). A Brief History of Gravitational Waves: arXiv:1609.09400

[67] Weinstein Galina. (2016). Einstein and Gravitational Waves 1936-1938: arXiv.org

[68] Einstein, Albert and Rosen, Nathan. (1937). On gravitational waves: Journal of the Franklin Institute, Vol. 223, p. 43-54

[69] Einstein, Albert, Infeld, Leopold and Hoffmann, Banesh. (1938): The Gravitational Equations and the Problem of Motion: The Annals of Mathematics, 39: 65–100.

[70] Einstein, Albert. (1934). The Problem of Space, Ether, and the Field in Physics: Classic Papers from Riemann to Einstein, edited with an introduction and notes by Peter Pesic

[71] Einstein, Albert and Infeld, Leopold. (1938). The evolution of the physics: Cambridge University Press

[72] Einstein, Albert. (1952). Relativity and the Problem of Space: in A. Einstein (1954), Ideas and Opinions, trans. Sonja Bergmann, Crown Publisher, New York.