

**Time and the Solar System, a human brain condition and perception biologically limited by Darwinian evolution.**

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*Theoretical Physics is of fundamental importance, from epistemology and the philosophy of science, The Vienna Circle, initially under the guidance of the German philosopher Schilick, turned especially to the analysis of language, seeking to establish the status of scientific propositions. by Schilick, in its first phase, Otto Neurath, Karl Menger, Kurt Godel and Hebert Feigl, Vitor Kraft. The group was strongly influenced by ideas from Wittgenstein and Rudolf Carnap, who became one of its most important members. The position that became characteristic of the Circle – logical empiricism – was supported by the principle of verifiability, which established: the meaning of a proposition is reduced to the set of immediate empirical data, the occurrence of which confers veracity to the proposition and whose non-occurrence falsifies it: that is, the meaning of a proposition is its empirical truth conditions.[37]*

**Time and the Solar System, a human brain condition and perception biologically limited by Darwinian evolution.**

### **1. Introduction:**

This article is about the conceptions of Time, basically a reflection of time in the solar system, it briefly discusses Greek thought and pagan societies that used astronomy to their advantage in their societies. Some ancient philosophers such as Saint Augustine, in a theological and philosophical way, give an approach to Time. Starting from an evolutionary point of view of animal and human life, we reflect and arrive at the conditions that time is only an intrinsic perception of the human mind and its limited perception of the reality of the universe, as the universe can go very far beyond in matter and particle than the cerebral reality of perception of these objects in the universe. There are some expositions of Stephen Hawking, in his reports on Light and Relativity, as well as Albert Einstein in his theories of the curvature of space-time, as well as the laws of Kepler, Copernicus and Isaac Newton in his Law of Universal Gravitation, the basis for the construction of calendars and time.

Little is discussed about time and the solar system, in Physics degree courses we basically see a brief exposition of Isaac Newton's Universal Gravitation and Kepler's Law, through the Physics books of Halliday and Sears and Zemansky, as well as everything else of the Physics course. Time starts to be discussed only in countries developed by theoretical physicists of quantum mechanics, if anything is discussed in Brazil, perhaps in 2 Astronomy courses among so many universities in the country, not to mention that in the last 15 years I have been looking for exact sciences and in terms of space in the Physics degree and bachelor's degree courses in the country, the demand for these areas decreases sharply, as in every context in the search for university courses in all areas, most likely due to the reflection of the conditions of secondary education in relation to the area of exact sciences, devaluation of professionals and lack of areas of activity after academic training. Noting that graduates from public universities have more difficulties in fitting into the job market, we also have a culture of massification and alienation among young people and an outsourcing of public schools in their scrapping from the public institution to the private sector, in which professions and the future becomes commodity fetishism of free market capitalist Darwinism by private institutions.

The sense of time, therefore, for Saint Augustine, It is entirely "spiritual" and in the light of eternity that it is interpreted. You can measure time when it passes, and you can only measure what exists. The past and the future do not exist, and the present has no extension; but man measures it as it passes, Saint Augustine's passage gives life a meaning and a consummation of Time, but it is philosophical. Here Christian existentialism was born, Augustine and Tertullian base Christianity in the Roman Empire for Western and Eastern civilizations, which lasted until 1492 with the Renaissance, but with the reforms of Martin Luther, Protestantism emerged in Europe, centered in Germany and France. With the Enlightenment, several Metaphysical philosophers emerged, such as Baruch Spinoza, Leibniz among others, the three foundations of modern existentialism are Soren Kierkegaard, in the strong school of the Protestant elite of pastors in 19th century Germany, Martin Heidegger (Germany) and Jean Paul Sartre (France) in the 20th century. In the time of Soren Kierkegaard we have his existentialism in creating a meaning for life to the pessimism of Artur Schopenhauer, in which he creates the theory of colors based on the Theory of Isaac Newton, as well as Goethe.

What is worth emphasizing is the study of the conceptions of Time and the Solar System in the conceptual part, from the point of view of Classical Mechanics, as defined by Isaac Newton in his universal law of gravity and in General Relativity by Albert Einstein, from the point of view of Quantum Mechanics, and current physicists, have not managed to unify the four forces in the Theory of Everything. Stephen Hawking and his Cambridge leadership no longer believed

in unification, however String Theory is heavily researched in the United States and other parts of the world. Emphasizing that all societies that pursued astronomy always worshiped the Astro Sun, just as in Egypt and pagan societies the movement of the Sun was decisive in generating parameters of hierarchy and organization, such as harvest and calendars. From Roemer and Isaac Newton's Principles, we arrive at a more realistic Physics and Astronomy, with the Law of Universal Gravitation of attraction of bodies and the determination of the speed of Light. Basically the article tries to create a less superficial view of the which would be Time, which passes through basic education students through mediators in the classroom without an adequate interpretation of the students, and the article focuses on the main ideals and conclusions about Time related to factors of biological evolution of adaptation and humans as something intrinsic to the Planet Earth and Time is just one thing of this factor and this biological limitation.

An interesting epistemological fact to note is Bachelard's theory of seeing the simple as complex and raising concepts about time and the stars. The sun has always been worshiped by pagan tribes, a philosophy that culminated in Nietzsche with the exaltation of Zoroastrianism, from Copernicus, Galileo, Kepler Giordano Bruno, the conceptions about the sun star change and the Astrology of the Empire is overthrown Roman, astrology was used, for example, in the Will to Triumph of the Nazi propaganda of the Third Reich and today Astrology is seen dominating the media in the media and newspapers. For example, together with Giordano Bruno, with Albertino and his Infinite Universe, and an example of construction that gave rise to good societies, such as Utopia, in the Enlightenment, The City of the Sun, by Thomaso Campanella. Emphasizing that in the Jewish culture of the Old Testament, Jacob changes his name to Israel and becomes the father of the twelve tribes of Israel and the Arabs, respectively, with Isaac and Ishmael, the Torah or Pentateuch book written by Moses, through monotheism creates a possibility in the afterlife, the hope of a Promised Land and a savior, in Greece with Greek philosophers from the pre-Socratics to the schools of Plato and Aristotle try to give meaning to life, as was the case in the writings of the Greek tragedy of Sophocles, Aeschylus and Euripides.



Figure:<https://diariodebiologia.com/2008/11/rabo-humano-ou-rabo-vestigial/>

The meaning of life is to basically understand biology and the substance of the universe, Nietzsche delved deeply into philosophy, and says that humans went through the greatest difficulties during evolution. Karl Marx portrays the necessary conditions for the well-being of the working class through the class struggle and struggles for labor rights and state property, condemned by some. Nietzsche basically defends capitalism and social Darwinism, stating that it produces weak minds, on the other hand, Karl Marx and Engels reflect the condition of the working class and classes in the effervescent Industrial Revolution, exposing fetishism, surplus value, which extends to nowadays due to the fetishism of merchandise and professions.

## **2-Theoretical Framework and Discussion:**

### **2.1-Astronomers of ancient Greece [12]**

Astronomy in Western knowledge emerged in ancient Greece with the pre-Socratics, with all pagan societies from all corners of the globe using the understanding of the stars and the behavior of the Earth and Sun for their agriculture, in the period of the Greek heyday we had Thales of Miletus (624 - 546 BC) with the influence of the Egyptians, brings astronomy and geometry to the Greeks, forms his disciples Anaximander, (610 - 546 BC), in this already emerges models of the behavior of celestial bodies associated with Gods, discovered the obliquity of ecliptic. Pythagoras of Samos (572 - 497 BC) theorized the sphericity of the Earth, the Moon and other celestial bodies, Philolaus of Creton (470-390 BC) conceptualized the movement of the Earth, Eudoxius of Cnidos (408-344 BC) the first to

conceptualizing the length of the year was 365 days and 6 hours, Aristotle of Stagira (384-322 BC) created the astronomical knowledge of his time, looking for rational explanations for natural phenomena, Aristarchus of Samos (310-230 BC) The first to create a consistent heliocentric model for the solar system, predating Copernicus by almost 2000 years. Arranging the planets in the currently accepted order of distance from the Sun, Anaxagoras of Clazomenae (499-428 BC) believed that the Moon reflected the Sun's light and studied the causes of eclipses. The movement of stars actually exists, but it cannot be observed with the naked eye. Stellar parallax was only calculated in the 19th century, by Friedrich Bessel, for the star 61 Cygni. Eratosthenes of Cyrenia (276-194 BC), librarian and director of the Alexandrian Library from 240 BC to 194 BC, was the first to measure the diameter of the Earth. Hipparchus of Nicaea (160 - 125 BC), considered the greatest astronomer of the pre-Christian era, built an observatory on the island of Rhodes, where he made observations during the period from 160 to 127 BC. As a result, he compiled a catalog with the position on the sky and the magnitude of 850 stars. With Ptolemy (85 AD-165 AD) (Claudius Ptolemaeus) was the last important astronomer of antiquity, he released the motion of the planets with considerable precision, and it was used until the Renaissance in the 16th century.

Through pagan and Greek civilizations, it was possible to organize a system of days, months, years that starts from the celestial sphere (The celestial sphere is an imaginary sphere) to the law of universal gravitation, where Horizon, Zenith, Nadir are defined. , North Celestial Pole, South Celestial Pole, Vertical Circle, North Geographic Point (or North Cardinal Point), South Geographic Point, Circles of height, Hour circles or meridians, Local and Parallel Meridian. Astronomical coordinate systems To determine the position of a star in the sky, we need to define a coordinate system. In this system, we will only use angular coordinates, without worrying about the distances to the stars. To define a position on a sphere we need to define an axis and a plane perpendicular to this axis. The position of the star will be determined through two position angles, one measured on a fundamental plane, and the other measured perpendicular to it. Before we get into astronomical coordinate systems, it is worth remembering the geographic coordinate system, used to measure positions on the Earth's surface.

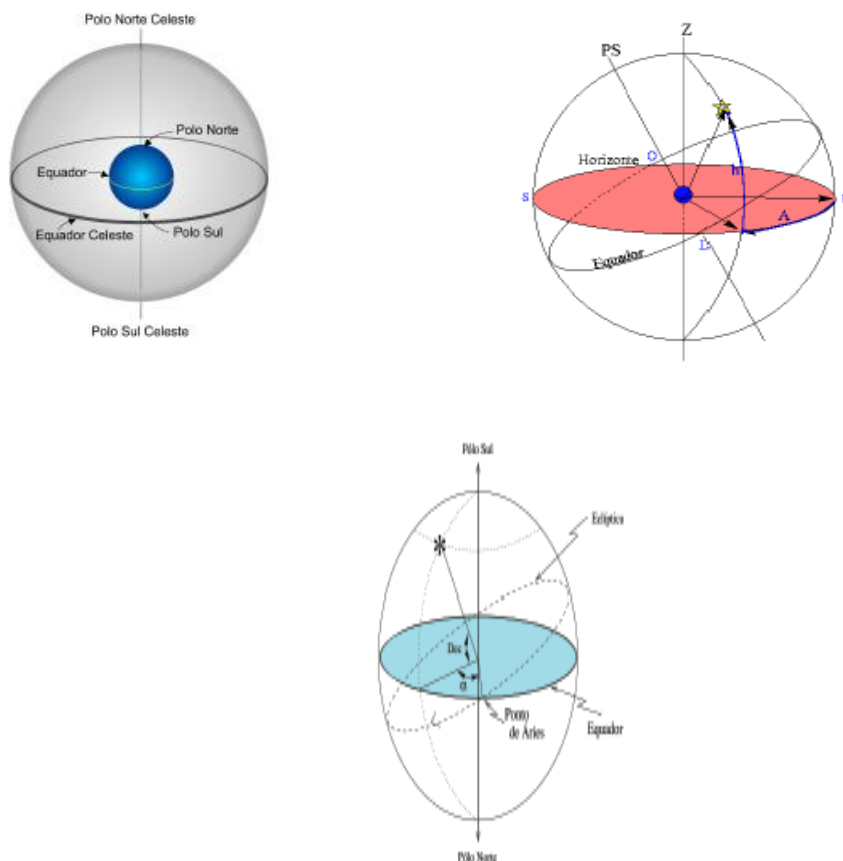


Figure:[12]

It's time to put the celestial equatorial system, this system uses the celestial equator as its fundamental plane. Its coordinates are right ascension and declination. The hour angle (H), sidereal time

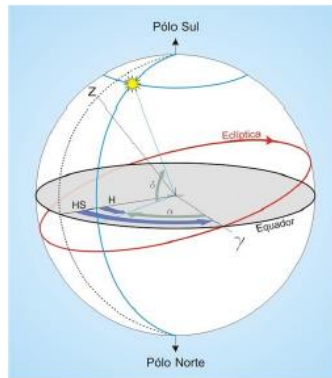


Figure:[12]

Diurnal movement of the stars

The diurnal movement of the stars, from east to west, is a reflection of the Earth's rotation movement, from west to east. Throughout the day, all the stars describe arcs in the sky parallel to the equator. The orientation of these arcs in relation to the horizon depends on the latitude of the place.

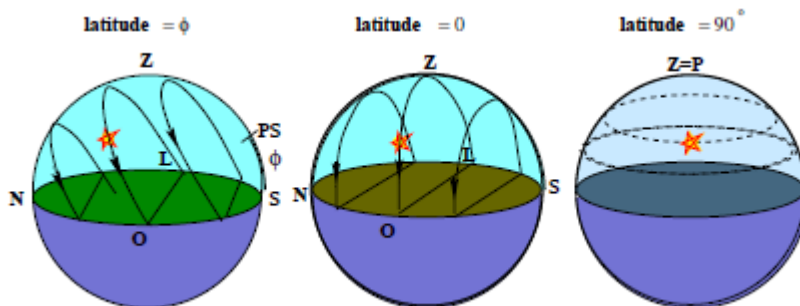


Figure:[12]

Annual movement of the Sun Due to the Earth's translational movement around the Sun, the Sun apparently moves between the stars throughout the year, describing a trajectory on the celestial sphere called the ecliptic. The ecliptic is a great circle that has an inclination of 23°27' in relation to the celestial equator. It is this inclination that causes the seasons.

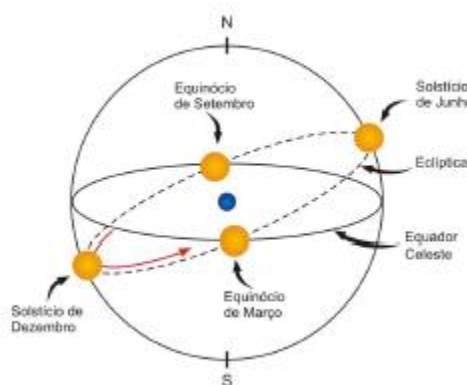


Figure:[12]

Positions of the Sun on the ecliptic at the beginning of each season. On the March and September equinoxes, the Sun is at one of the two points where the ecliptic cuts the celestial equator; On the June and December solstices, the Sun is at one of the two points of maximum distance from the equator.

Insolation The amount of solar energy that arrives, per unit of time and per unit of area, to a surface perpendicular to the sun's rays, at the average Earth-Sun distance, is called the solar constant, and is worth 1367 W/m<sup>2</sup>. This value of the solar constant is measured by satellites just above the Earth's atmosphere.

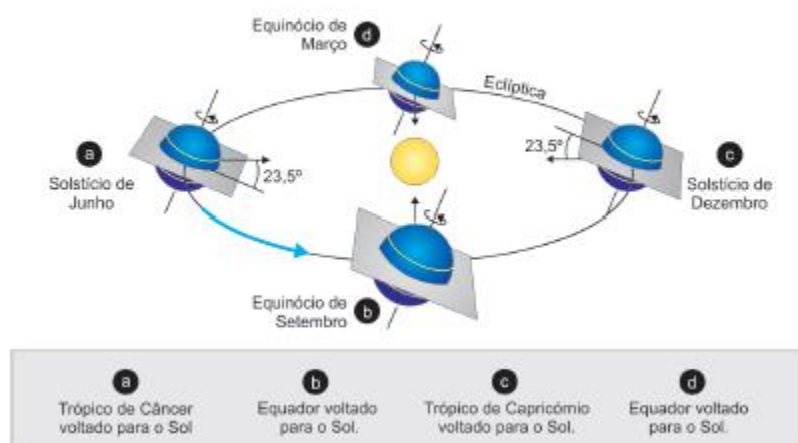


Figure:[12]

Cause of the seasons. Due to the 23.5° inclination between the Earth's equator and the ecliptic, as the Earth moves in its orbit, the parallel that is pointed directly at the Sun changes.

### Movements of the Moon

It is the closest celestial body to Earth, and therefore the one that presents the most notable movement for us, with the exception of passing bodies, such as meteors. The current value of the distance to the Moon was obtained by laser, using a mirror placed on its surface by astronauts. Measuring the round trip time of a laser beam fired from the Earth towards the Moon, its distance varies from 356,800 km to 406,400 km, with an average value of 384,000 km. The eccentricity of the Moon's orbit is 0.0549. The Moon's orbital plane has an inclination of 5°9' to the ecliptic. Although this angle remains approximately constant, the orbital plane is not fixed, moving in such a way that its axis describes a complete circle around the ecliptic axis over a period of 18.6 years. Therefore, in relation to the Earth's equator, the Moon's orbit has an inclination that varies from 18.4° (23.5° - 5.15°) to 28.7° (23.5° + 5.15°). In relation to the Moon's equator, its orbital plane has an inclination of less than 1°. The average apparent diameter of the Moon is 31' 5" (0.5180), the same size as the apparent diameter of the Sun. Knowing that the average distance to the Moon is 384,000 km, it can be deduced that its diameter is 3476 km ( $D = 384\,000 \text{ km} \times \sin 0.518$ ). Its mass is 1/81 that of the Earth.



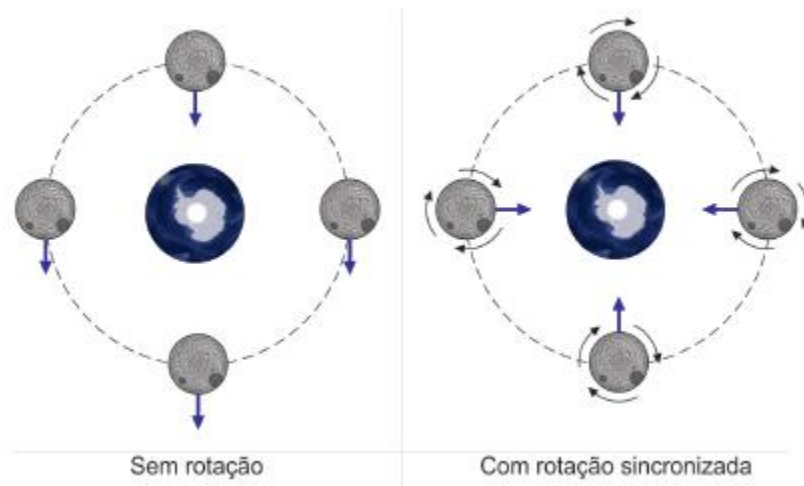


Figure:[12]

Schematic representation of the Moon's movement around the Earth. If the Moon did not rotate (figure on the left), it would always have the same face facing the same point in space, changing the face facing the Earth. The only way for it to always keep the same face facing the Earth is by rotating around its own axis with the same period in which it rotates around the Earth (figure on the right).

Below are the two types of Lunar and Solar eclipses.

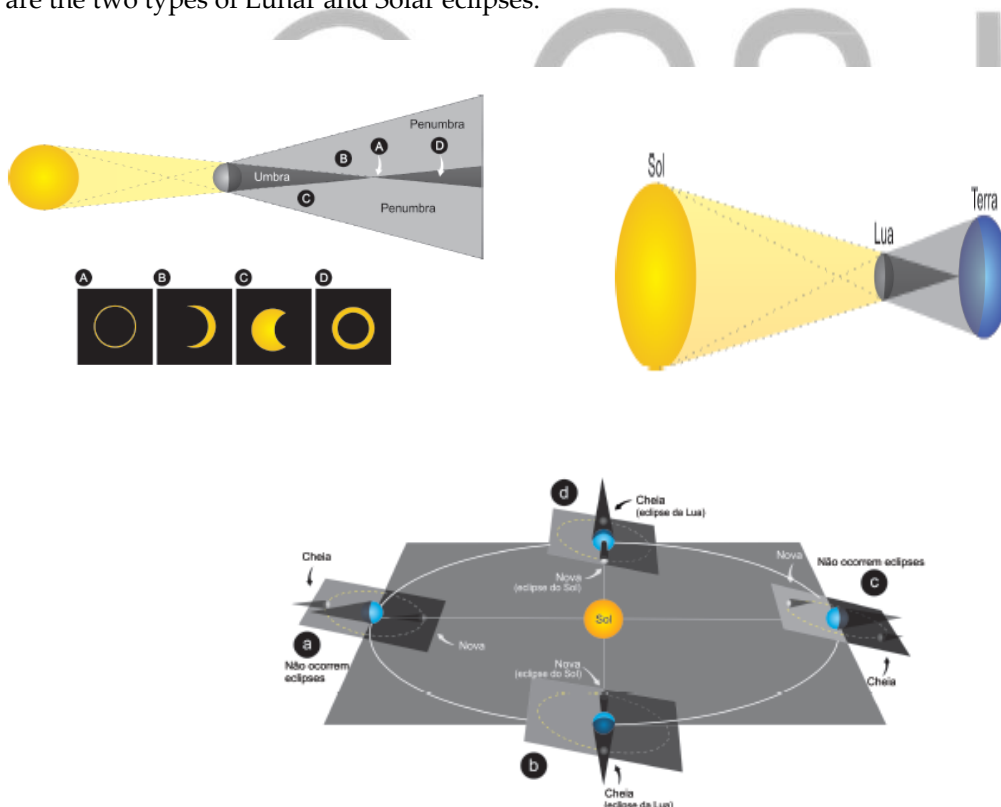


Figure:[12]

The figure represents the Moon in New and Full phases in four different lunations (A, B, C and D). In lunations B and C, the New and Full phases occur when the Moon is in the ecliptic, so eclipses occur. In lunations A and C, the New and Full phases occur with the Moon away from the ecliptic and no eclipses occur.



## 2.2-Time Measurements[13]:

The measurement of Time is carried out through the rotational movement of the Earth, which causes the apparent rotation of the celestial sphere. For example, 06/30/2022, sunrise in Porto Alegre occurs at 7:21, the Sun reaching maximum height at 12:28 (true noon) and sunset occurs at 17:35, Brasília time .

- **Sidereal Day**

### Solar Time

Solar time referenced by the Solar system.

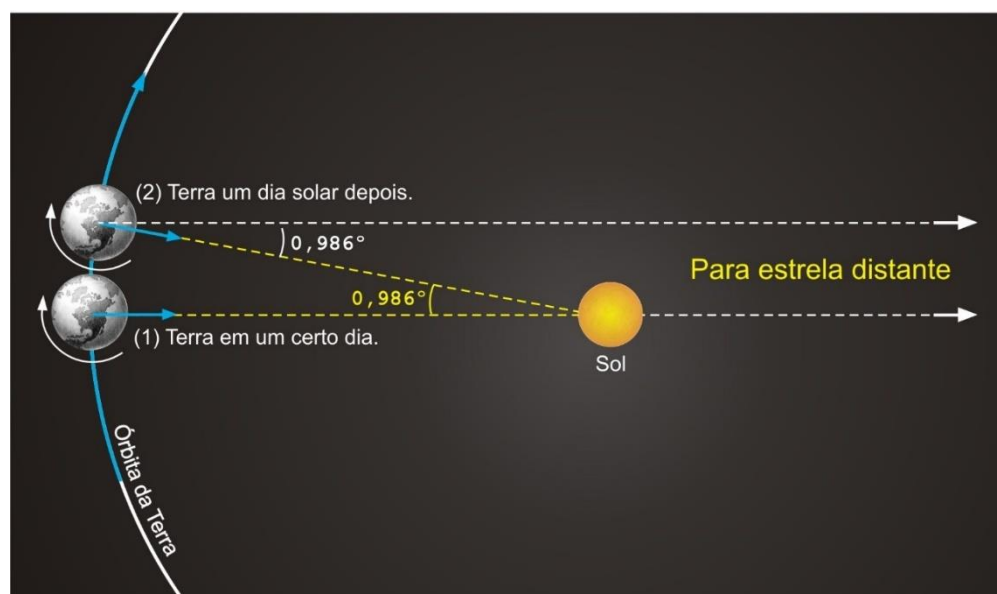


Figure:[13]

- **Solar Day:** The solar day is more than a measurement of the time interval existing between two successive passages of the Sun through the meridian of the place - two consecutive superior culminations of the Sun. It is 3m56s longer than the sidereal day, because the Sun moves in direction opposite to the diurnal movement, that is, from west to east. The difference is a consequence of the Earth's translational movement around the Sun, of approximately 1 degree (4 minutes) per day ( $360^\circ/\text{year}=360^\circ/(365.25 \text{ days})=0.9856^\circ/\text{day}$ ).

Greek astronomers knew that the Sun does not move with constant speed on the ecliptic, as a result of which the northern autumnal equinox occurs 186 days after the northern spring equinox, however 179 days pass the next northern autumnal equinox. In addition to the Earth's orbit around the Sun being elliptical, the Earth's speed around the Sun is not constant.

Kepler's second law, through the conservation of angular momentum, the law of areas, deduces that **the speed is greater when the Earth is closer to the Sun, that is, in perihelion**, which causes a daily variation in the length of the Solar day of  $1^\circ 6'$  (4m27s) in December-January, and  $53'$  (3m35s) in June, when the Earth is furthest from the Sun, that is, at aphelion.

### True solar time:

And the hour angle (angle measured in relation to the equator, from the local meridian to the astro meridian) of the center of the Sun. Since the hour angle depends on the locations, where the zenith changes, the true solar time changes from location to location.

### Mean solar time:

The hourly angle of the center of the mean sun is the mean solar time, being the fictitious one, which has the movement moves along the celestial Equator (while the real Sun moves along the Ecliptic), the angular speed being constant, so that the mean solar days are identical to each other (while the true solar days are not equal to each other because the Sun's movement on the ecliptic does not have constant angular velocity). Since the movement of the Sun on the ecliptic is annually periodic, concluding that the average solar year is equal to the true solar year.

#### **Civil time (Tc):**

The average solar time is increased by 12 hr, that is, using the origin of the day as the instant at which the average sun passes through the lower meridian of the place. The reason for the institution of civil time is not to change the date during the hours of humanity's greatest activity in the financial, commercial and industrial sectors, which would cause numerous practical problems.

#### **Universal Time (TU):**

Being the civil time (mean solar time+12 hr) of Greenwich, England, defined as the zero point of geographic longitude at the International Meridian Conference, at the Washington convention in October 1884. There is the Meridian Line, at Royal Observatory, Greenwich.

### Time zones

#### **International Atomic Time (TAI):**

Atomic time is more accurate than Earth's rotation. From 1967 to today, one second has been defined as 9,192,631,770 times the period of the light emitted by the isotope 133 of Cesium, at the fundamental level, passing from the hyperfine level F=4 to F=3, TAI is used, deferred by an average of several atomic clocks that generate accuracy.

#### **Calendar**

Since ancient times, difficulties have been encountered in creating a calendar, as the year (duration of the Sun's apparent revolution around the Earth) is not an exact multiple of the length of the day or the length of the month. The Babylonians, Egyptians, Greeks and Mayans had already determined this difference.

It is important to distinguish two types of years:

**Sidereal year:** is the period of revolution of the Earth around the Sun in relation to the stars. Its length is 365.2564 mean solar days, or 365d 6h 9m 10s.

**Tropical year:** is the period of Earth's revolution around the Sun in relation to the Vernal Equinox, that is, in relation to the beginning of the seasons. Its length is 365.2422 mean solar days, or 365d 5h 48m 46s. Due to Earth's precession movement, that is, due to the slow displacement of the poles in relation to the stars, the tropical year is slightly smaller than the sidereal year. The calendar is based on the tropical year. Precession and mutation are components of the Earth's global response, oblate, elastic and rotating, to the gravitational torques of the Moon, Sun and other planets.

The Egyptians, whose work on the calendar dates back to 4 millennia before Christ, initially used a year of 360 days beginning with the annual flooding of the Nile, which occurred when the star Sirius, the brightest star in the sky, was born just before sunrise. Sun.

Our current calendar is based on the ancient Roman calendar, which was lunar. As the synodic period (apparent phases) of the Moon is 29.5 days, one month had 29 days and the other 30 days, which totaled 354 days. Then every three years an additional month was introduced to complete the 365.25 days per year on average.

In 1582, during the papacy of Gregory XIII (Ugo Boncampagni, 1502-1585), the vernal equinox was already occurring on March 11, greatly anticipating the date of Easter. Hence it was deduced that the year was shorter than 365.25 days (today we know that it has 365.242199 days). This difference reached 1 day every 128 years, and this year it was already 10 days. The pope then introduced a new reform in the calendar, under the guidance of the German Jesuit astronomer Christopher Clavius (1538-1612), to regulate the date of Easter, establishing the Gregorian Calendar.

Julian date

Leap Year - origin of the word

XXI century

Jewish Calendar

Muslim Calendar

Chinese Calendar

### **2.3-Isaac Newton [14][15].**

The foundations of modern physics

Despite the importance given by Newton to matters of a religious nature, its meaning within the history of thought lies in the field of the most rigorous mathematics and natural science. His most important contributions in these areas were the creation of infinitesimal calculus, the development and systematization of mechanics, the theory of universal gravitation and the development of the laws of luminous reflection and refraction, in addition to the theory on the corpuscular nature of light.

The Mathematical Principles of Natural Philosophy constitute the first great exposition and the most complete systematization of modern physics, synthesizing into a single whole the mechanics of Galileo and the astronomy of Kepler, and providing the principles and methodology of scientific research into Nature.

Absolute space and time

Especially important role for the history of philosophy is played by the notions of absolute space and time, as Newton formulated them in the Principles. These notions do not just present a physical aspect, but have metaphysical consequences. The very origin of the concept of absolute space in Newton could. The very origin of Newton's concept of absolute space could be found – as JJ Smart states – in the works

Despite the metaphysical configuration that the theories of absolute space and time can confer on Newton's thought, it must be emphasized that, in the investigation of physical phenomena, the author of the Principles rejects any notion of metaphysical or religious order.

### **The Universal Gravitation Calculation**

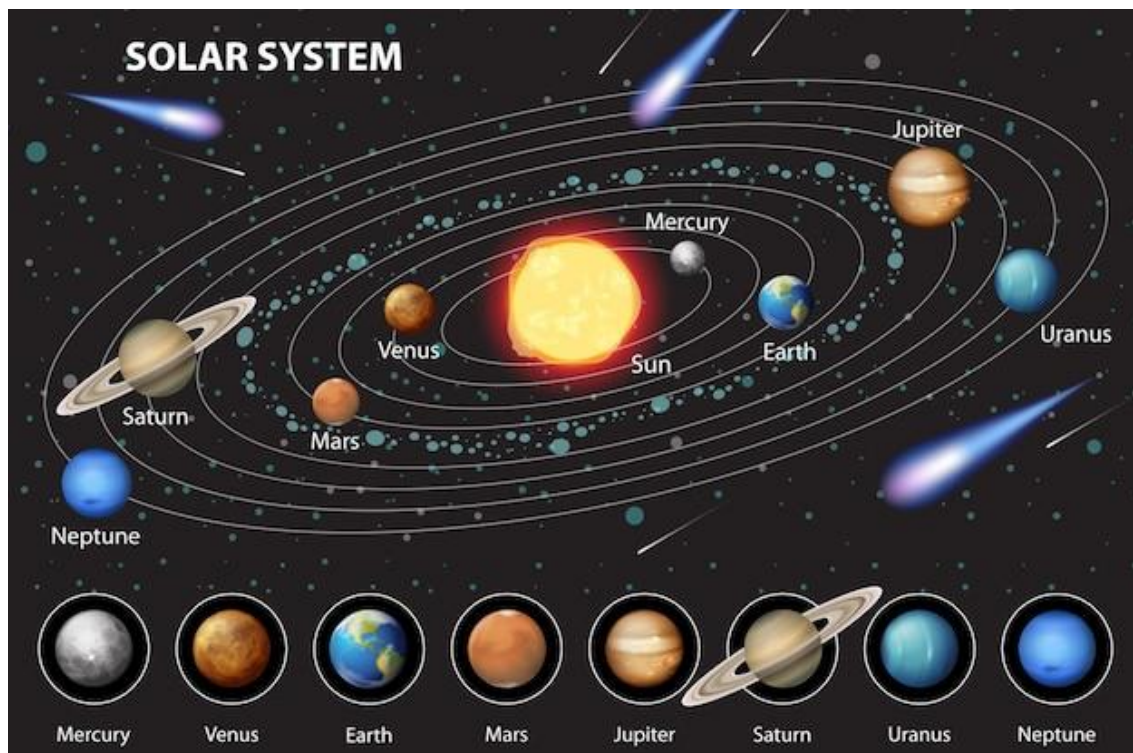


Figure: [FreePik]

The Law of Gravitation says that every particle in the universe attracts every other particle with a gravitational force whose modulus is given by

$$F = G \frac{m_1 m_2}{r^2} \text{ (Newton's law of gravitation).}$$

where  $m_1$  and  $m_2$  are the masses of the particles and the distance between them and  $G$  ( $=6.67 \times 10^{-11} \text{ N} \cdot \text{m}^2/\text{kg}^2$ ) and the gravitational constant. Considering that the law of universal gravitation covers, Gravitational Behavior of Uniform Spherical Shells, Vector Superposition, Gravitational Acceleration, Acceleration of Free Fall and Weight, Gravity Inside a Spherical Shell, Potential Energy of a System, Escape Velocity. **And the gravitational attraction that maintains the stability of the solar system and makes the existence of satellites possible (It is also important to observe the shape of satellites as a consequence of this attraction in the formation of the Solar System and other stars and planets, rotation and translation)**, both natural and artificial, in orbit around the Earth and other planets. These movements are governed by Kepler's laws of planetary motion, which are direct consequences of Newton's laws of motion and gravity; 1. Law of orbits. All planets move in elliptical orbits with the Sun at one focus; 2. Law of areas. The straight line connecting any planet to the Sun sweeps out equal areas in equal time intervals. (This law and equivalent is the law of conservation of angular momentum.); 3. Law of periods. The square of the period  $T$  of any planet is proportional to the cube of the semimajor axis of an orbit. For circular orbits of radius  $r$ .

$$T^2 = \left( \frac{4\pi^2}{GM} \right) r^3$$

where  $M$  is the mass of the attracting body (The Sun in the case of the solar system). In the case of elliptical orbits, the radius is replaced by the semi-major axis  $a$ ; ending with Energy in Planetary Movement.

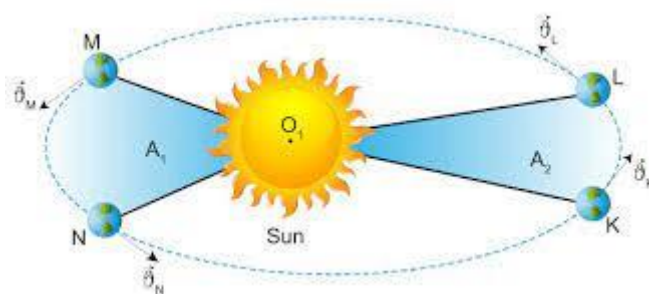


Figure: <https://mundoeducacao.uol.com.br/fisica/leis-kepler.htm>

### 2.3-Charles Darwin [22]:

The important thing is to explore the book, *The Origin of Species*, to substantiate the understanding of time, Charles Darwin's book created several branches of science in the 20th and 21st centuries, with Darwinism, Neo-Darwinism and even supporting Neo-Lamarquism. *The Origin of species* provides the basis for understanding the different species that exist or already exist, and created distortions by dictatorial regimes using the theory of natural selection in the sphere of human beings, considering the theory of Charles Darwin and even Mengel, used markedly in Eugenics theory of the 19th and 20th centuries. Darwin emphasizes that living beings struggle to survive through constant movements, modifications, migrations and displacements of living beings. The fittest that survive, increase the number of their descendants, increasing the probability of perpetuating their species in the world, while others become extinct. Therefore, the extinction of species over the ages is the rule, not the exception.

Adaptations and small modifications that occur in beings, although imperceptible, says the theory of natural selection, can be fundamental in allowing the species to survive.

"Due to this struggle for life, when any variation, however small and regardless of the reason that originated it, offers any degree of advantage to an individual of any species in his infinitely complex relationships with other organic beings and with external nature, this tends to preserve the individual and will generally be inherited by its descendants. In this way, the offspring will also have a better chance of surviving, since, of the many individuals of any species that are born periodically, only a small number manage to survive. In this principle, by means by which every little variation, when useful, is preserved, I call natural selection."

Consequently, it overturns the creationist theory, the theory boils down to the fittest to survive and not the strongest or superior. Those who develop physical traits, instincts and skills that increase the chance of survival tend to stay alive. Within the same species, descendants can represent the extinction of their progenitors, if the first develop skills that improve their survival. Darwin also works on the works of Malthus and Adam Smith, in which, through Malthus' theory, the species reproduces as many as possible until it encounters food restrictions, where hunger, deaths and disputes occur. returning to the natural state.

### 2.4-Einstein's Theory of Gravitation [15][16][17]

Einstein showed that gravitation and acceleration are equivalent. This equivalence principle is the basis of a theory of gravitation (the theory of general relativity) that explains gravitational effects in terms of a curvature of space.

The Special Theory of Relativity or Special Theory of Relativity (TRR), published in 1905 by Albert Einstein, describes Physics in the absence of gravitational fields. The physics community thought that Isaac Newton's classical mechanics, which starts from Galileo's relativity, which are the mathematical equations called Galileo's transformations, describes the conceptual part of speed and force for reference systems, that is, reference systems. *In Switzerland, Hendrik Lorentz and others in Europe, prove that Maxwell's equations, electromagnetism, do not behave in accordance with the transformation of Galileo when the reference system changes. Special Relativity is restricted only to systems that do not take into account gravitational fields. In 1915 a generalization emerged to the General Theory of Relativity that included gravitational fields.* In the philosophical field, Relativity eliminates any possibility of the existence of time and absolute durations in the universe as a whole, Isaac Newton, or as a priori data from our experience and a



posteriori, from Emanuel Kant. After Henri Poincaré, relativity forced philosophers to reformulate the question. It is worth mentioning that in addition to Emanuel Kant, in his Critique of Pure Reason, the philosophical school in Europe, especially Germany, France and England, were concerned with rationalism and empiricism, and the questions of absolute spaces and times in philosophy. In 1856, with the experiences of **Fizeau, Michelson-Morley** in the experiences of the fringes raise **the questioning of the luminiferous ether**, prove the constant speed of light and reach the current value that the Danish Homer had discovered in 1678, providing the basis for the construction of Special and General Relativity. Bringing together the experiences of the 19th century and the preceding Philosophy of time, space and light through Mach's Principle. *Mach's principle says that, in the example, according to the bucket experiment, what the observer is actually detecting is not the acceleration of the bucket in relation to absolute space, but rather in relation to all the masses in the universe, that is, in relation to a reference frame linked to fixed stars – the concavity would be equally observed if we left the bucket fixed and made the set of stars revolve around the Earth. According to Mach, The law of inertia does not refer to rest, in uniform movement, in relation to absolute space, but in relation to the center of mass of all the masses in the universe (referential stars).* What we today call Mach's principles is a conjecture that encompasses the set of ideas exposed above, difficult to be translated into a single proposition. Albert Einstein's formulation is as follows: "Inertia measures the resistance of a material point to acceleration with respect to the masses of all bodies in the universe, therefore being affected by them". Note and adopt that Mach's principle is the basis for questioning the possibilities of Physical laws, it is only a proposition adopted by Albert Einstein to formulate Relativity, however a good principle for questioning what time would be outside the sphere of Earth and see opinions from specialized physicists, thinkers and philosophers of Physics who contradict Mach's thinking.

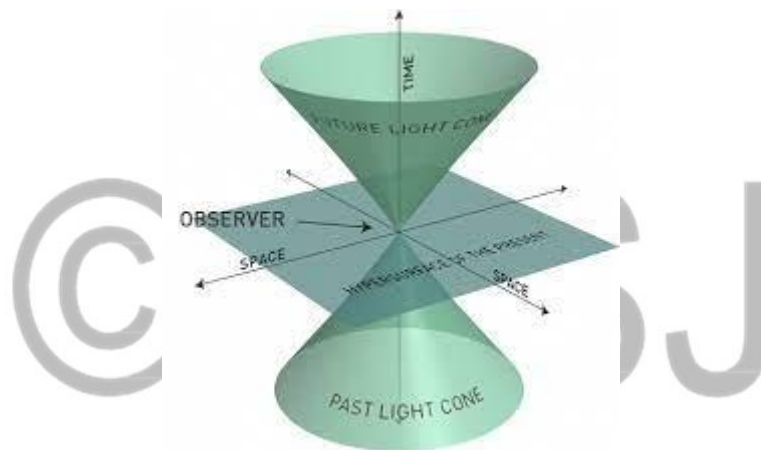


Figure: [FreePik]

In special relativity, we consider Minkowski spacetime, where the fundamental object of study is the light cone, we have the invariance of the light cone under "boosts". Einstein's, 1915, equivalence principle makes it possible to handle accelerated frames of reference, covariance under generalized coordinate transformations. Einstein's good experience about elevators. For the **Fermat's principle**, the light has to travel the path that minimizes travel time as a result of us needing to think about curved spaces - or rather, curved space-time.

In gravity covariants is a manifestation of the curvature of spacetime, where the spacetime metric has two functions, it determines the trajectory of matter and is curved by matter. For example, the route between two different points on the globe.

*It can be deduced that from the point of view of **General Relativity**, the possibilities of curvature of spaces is the correct theory, Special Relativity defines the geometric properties of space-time in inertial frames, in the absence of a gravitational field. The theory of relativistic gravitation was a great challenge for Einstein, who first had to create the Theory of **General Relativity**, generalizing the concept of space-time to non-inertial frames of reference and using the observed equivalence between inertial mass (from the second law of Newton) and gravitational mass (from gravitational force), stated in two basic postulates:*

1. Principle of Relativity - the laws of nature are the same in all frames of reference, inertial or non-inertial.
2. Principle of Equivalence (strong version) - the effects due to the acceleration of the reference frame and those due to

gravitation are equivalent.

From the second principle, **both accelerated and resting frames of reference in the presence of gravitational field are references non-inertial, and the universal nature of the gravitational interaction allows it to be incorporated into the structure of space-time, the effect of which is the curvature generated by the mass.** The laws of Special Relativity are valid in local inertial frames, in free fall when in the presence of the gravitational field, and can be transported to the observer's (non-inertial) frame of reference.

The first postulate of General Relativity (Principle of Relativity) generalizes the concept of equality of all observers, regardless of their location, orientation or state of movement, including acceleration. The second postulate (Principle of Equivalence in the strong version) is based on the observation that all objects, regardless of their nature, respond to the gravitational field in the same way. It means that all objects in free fall undergo the same acceleration, independent of their masses or any other properties, which leads to equality between inertial and gravitational masses.

*O Gravitational field can be defined as a region in which a body is acted upon by a force, due to the presence of one or more bodies, that is, it is how a body can be influenced by the presence of others.* The gravitational field is generated by the presence of mass, which generates a change in the region around it and causes effects on other bodies. As the gravitational field is generated from the mass, the greater this quantity, the greater the effect generated. Remarkable effects are generated by bodies of relatively large mass.

*The point to be emphasized is that the origin of gravitation is not known. The scientific community believes in the attractive particle graviton which gives rise to gravity, this if proven would explain Isaac Newton's Universal Gravitation or Albert Einstein's General Relativity.*

*Through this we could equate time, facts of the wave-particle duality of light conceptualizing time, biological reality through Quantum Mechanics and General Relativity, with this quantum and biological temporal reality would be equated.*

## Gravitational waves

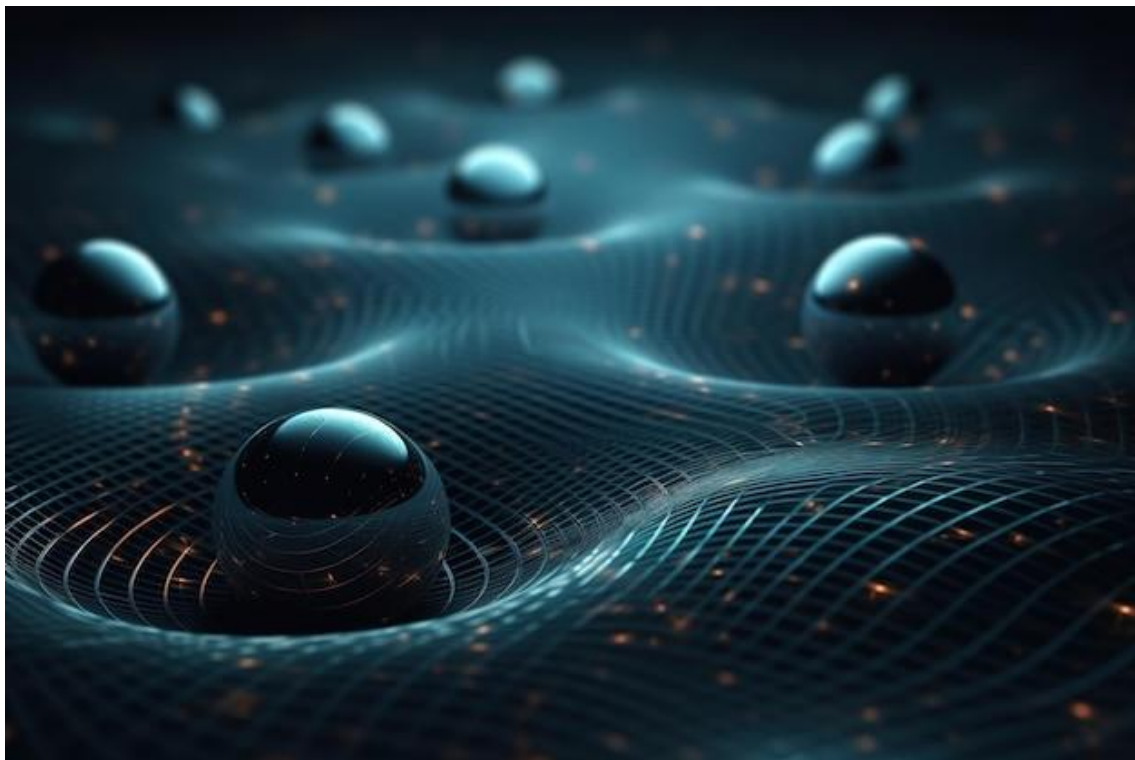
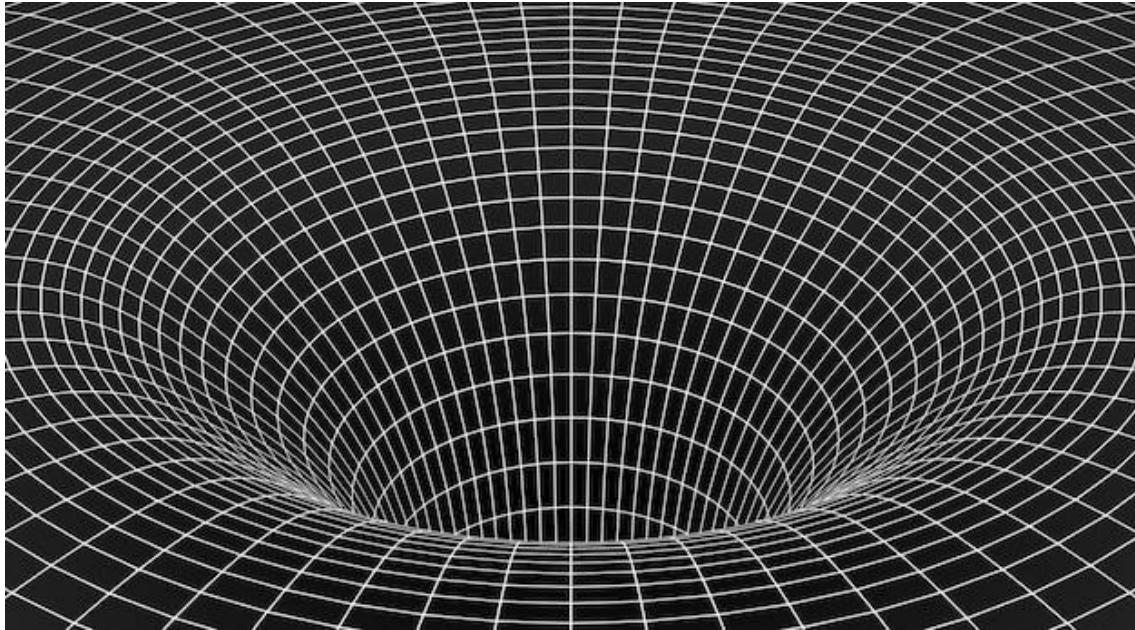
It is nothing more than the collision of very massive bodies, such as black holes and neutron stars, propagating through space-time.

It was proven in early February 2016, where gravitational waves were detected. It can bring countless benefits.

"An event is anything that happens and that can be observed, allowing the observer to provide three spatial and one temporal coordinates. We can say, for example, that the collision between two vehicles is an event that occurred somewhere in space and in a certain moment. **The theory of relativity shows that space and time are not absolute, but depend on the rest or movement of an observer.** Time, therefore, could no longer be treated separately from the other dimensions. Space and time need to be understood as if they were intertwined in a single structure, that is, as if they were one thing. To achieve this, a geometric shape was created, in the form of a checkered mesh, to represent the intimate connection between time and space. This structure became known as space-time.

*The gravity, for the Theory of Relativity, is understood as a curvature created in spacetime due to the presence of a massive body.* In the figure below, we can observe a checkerboard mesh, representing space-time, which is curved by the presence of two bodies. *A gravitational attraction is understood as a movement that occurs as a result of this curvature.*





**Figure: [FreePik]**

Now imagine that the bodies in the previous image collide. As a result of this collision, vibrations appeared in our body, generating gravitational waves, which, compared to other existing radiation, are extremely subtle and difficult to detect – this is because gravity is the weakest of the fundamental forces (magnetic force, electrical force, nuclear forces). and gravitational force). We need to understand that gravitational waves are not propagating in space-time, *but that itself **space-time “mesh”** is oscillating due to the interaction between massive bodies.*”

After Newton, Physics focused on Mechanics, Optics, thermodynamics, focusing on Analysis and Geometry returned in 1806 on the initiative of Charles J., Brianchon and Gaspard, proving that the six sides of a hexagon circumscribe a conic section SSE the three lines common to the three pairs of opposite vertices have a point in common. He was considered “projective dual” of the **Pascal's theorem** of 1639, which states, **if an arbitrary hexagon is inscribed in a conic section, then the three pairs of continuations of opposite sides meet at points on a straight line.**

Inspiring Karl Feuerbach, in 1822, who discovered the circle of 9 points, proving the **Feuerbach's theorem**. Leading Jakob Steiner and Gauss in 1824 the laws of "inversive geometry". Through Euclid's parallel postulates "given a line L and a point P, there can be only one line that passes through P and does not intersect L" Nicolai Lobachevski showed that this was false, together with Gauss and Bolyai, leading to the formation of geometries hyperbolic. Ultra parallel theorem, "given two parallel lines (hyperbolas), there is a single line perpendicular to them!"

It follows then that flat (Euclidean), closed (ie, spherical) and open (GLB) spaces are the only manifolds that satisfy a simple principle: they are homogeneous and isotropic Flat (Euclidean), closed (ie, spherical) and open (GLB) spaces are the only manifolds that satisfy a simple principle: they are homogeneous and isotropic Cosmological principle: space is the same everywhere, and in all directions, **Lobachevski space was one of the motivations for Georg B. Riemann, in 1854, proposed his global vision of Geometry as the study of varieties with any number of dimensions, in any type of space.**

"Einstein went even further and managed to describe, through General Relativity, the phenomenon of gravity as a change in the geometry of space, a curvature in its shape. *Large masses are capable of distort space and, consequently, time.* Since light propagates through space, which is curved, it will take different times for observers who are in regions with different gravitational accelerations.

Despite being called a theory, several experimental observations have already confirmed the validity of the Theory of Relativity. One of the most recurrent experiments is the phenomenon of gravitational lensing: when light propagates in regions of space highly distorted by large masses, its path is curved. Therefore, it is possible that the images of some stars appear repeated or even blurred in images taken by telescopes and radio telescopes. The discovery of this phenomenon has made it possible, in recent years, to correct these images." **It is worth highlighting that the curvature of space-time must be understood, in terms of attraction, taking into account the superposition of the interaction of bodies to equate gravitation and the understanding of Time and the Stars and their Rotations and Translations.**

#### The Twins Paradox:

Considering the Twin Paradox, or Langevin Paradox, being a mental experiment that considers time dilation, based on Special Relativity. In this experiment, a man travels through space in a high-speed ship, returning home younger than his twin brother who remained. Consider two identical twin brothers A and B, brother A in the spacecraft at a speed very close to the speed of light, while brother B remains at rest on Earth. For B, the ship is moving and can say that time is running more slowly for his brother A, who is located on the ship. Similarly, brother A sees the Earth moving away and can say that time runs more slowly for his brother B. The question is: which brother will be younger when brother A returns to Earth? We must take into account that the statement is based on a wrong premise. In Special Relativity, the simultaneity of events is not guaranteed between references that move in relation to each other, so it makes no sense to compare the passage of time for twin A with the passage of time for twin B without referencing where the comparison is being done. Twin B can claim that time passed more slowly for his twin A, as it was measured in his frame of reference. Likewise, the brother can state that time ran more slowly for his brother B, as it was measured in his frame of reference, on the ship. Therefore, it is symmetrical when each brother is in his own reference frame, but there is a break in fundamental symmetry, as twin brother A does not stay in the same frame of reference all the time, he left the Earth's frame of reference and moved in the ship's frame of reference in relation to the reference of the Earth, then it had to reverse the direction of movement, being another change of inertial reference, ending up accentuating and returning to the reference in which it was at the start, this being the third change of inertial reference. It is concluded that the passage of time in the Earth's inertial reference frame, where B has always been and where A left, it is concluded that B is older than A, as a result of the changes in frame of reference imply acceleration, finding itself in a frame of reference non-inertial. Analyzing the Gemini Paradox, it makes no sense to compare it for physical purposes, as the time considered is that of biological evolution, that is, solar time. For example, if we have a ship with Earth's climate and solar energy conditions, what would be the evolution of biological temporal twin A when it leaves Earth and goes into space. We cannot answer, as we have no research or experience, but we know that adopting the inertial reference of B, the Earth, we will have that A will return younger than B, as he is in a non-inertial reference and outside the time of the solar system, Therefore, it is obvious and consequential that he will be younger, however, what would be the

biological evolution of A outside the solar system. **We must consider that the human, both twin A and B, are biologically dependent on the Earth and the Sun, and these factors are what determine the time and reality of perception of the physical laws of the universe.** Consequently, would twin A be eternal, outside planet Earth? It is easier to believe that Twin A would die easily in space, as he is outside his biological reality, limited to living only on Earth. **It reminds us of what human life is in the universe**, the condemnation of Earth, and we would consider the following thought by Aldous Huxley, "Would Earth be a hell from another Planet?". However, genetic engineering could easily solve travel beyond Earth, and thinking that humans could travel through space is completely delusional. Or, the future will be robotic in the intergalactic relations of exploring other planets, but the objective of the scientific community is to inhabit and populate other satellites.

### 2.5-Entropy[14][15]:

Entropy is a quantity of thermodynamics that measures the evolution of systems from a state of order to disorder, which infers and shows the passage of time, thus entropy explains the quantum changes of a system, and proves the physically real time itself. According to the laws of thermodynamics, particles are distributed at quantized energy levels, including translational, vibrational, rotational and electronic, gaining "information", that is, new values, such information is never lost, even if the matter is transformed, a paper or piece of burned wood, if it were possible to describe this information and control all the properties of the particles, the process could be reversible.

As Entropy always increases and it is impossible to reverse, that is, disorder is always increasing, with new information, it is known that entropy only occurs in one direction, so time itself can only advance towards the future, we cannot go back in time, we can only explain the past with the information in a system, and as entropy increases, we cannot predict the future. As everything depends on the amount of entropy produced in an event, if it is small, there is a possibility of reversing the event and in the quantum world, the principle of quantum superposition says that two superimposed states of a system are possible. The arrows of time, which points the direction of time in a system where entropy increases, quantum systems that evolve in one or the other temporal direction can also evolve simultaneously along both temporal directions.

### 2.6- Radioactive Dating and Particle and Nuclear Physics[8].

Because the radioactive half-life of a given radioisotope is not affected by temperature, physical or chemical state, or any other influence of the environment outside the nucleus except for the direct interactions of the particles with the nucleus, radioactive samples continue to decay to a predictable rate and can be used as a clock. This makes several types of radioactive dating viable. For geological dating, where the time interval is on the order of the age of the Earth and the methods use clocks in rocks, there are two main uncertainties in the dating process:

1. **What was the quantity of the child element When were rocks formed?**

two. **Were any of the parent or child atoms added or removed during the process?**

Starting with the simplest case, where there are no daughter atoms present and no mass is lost from the sample, the age can be determined by measuring the relative amounts of the isotopes. This can be done by chemical means, but for precise determinations, mass spectrometry can be used. From the radioactive decay equations, an expression for the elapsed time can be developed. Using the common nuclear practice of calling isotopes "parent" and "daughter", we use P and D to indicate the numbers of associated atoms. The requirement to maintain the same number of cores gives

$$N_D(t_1) + N_P(t_1) = N_P(t_0)$$

and the radioactive decay relationship is

$$N_P(t_1) = N_P(t_0)e^{-\lambda(t_1-t_0)}$$

The elapsed time is then



$$\Delta t = t_1 - t_0 = \frac{1}{\lambda} \ln \left[ \frac{N_p(t_0)}{N_p(t_1)} \right]$$

but with the use of the first expression above it can be expressed in terms of the current concentrations of the parent and daughter isotopes.

$$\Delta t = \frac{1}{\lambda} \ln \left[ 1 + \frac{N_D(t_1)}{N_p(t_1)} \right]$$

Now suppose that there was an original quantity of the child element present at the time of formation of the sample under study. This adds an additional unknown to the process and requires additional data to allow for a solution to elapsed time. The demand for populations is now

$$N_D(t_1) + N_P(t_1) = N_D(t_0) + N_P(t_0)$$

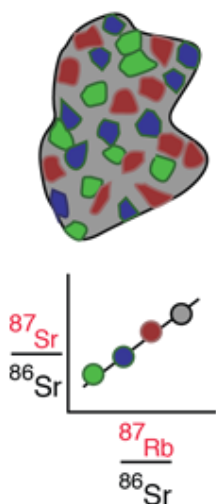
Fortunately for radioactive dating processes, additional information is available in the form of other isotopes of the elements involved in the radioactive process. If there is another isotope of the daughter element D' that is assumed to be constant throughout the process, then the population requirement can be expressed in terms of the ratios

$$\frac{N_D(t_1) + N_P(t_1)}{N_{D'}(t_1)} = \frac{N_D(t_0) + N_P(t_0)}{N_{D'}(t_0)}$$

We can be reasonably confident that the isotope D' is constant if it is not radioactive (not part of one of the natural radioactive series). Using the radioactive decay equation above, this becomes

$$\frac{N_D(t_1)}{N_{D'}(t_1)} = \frac{N_P(t_1)}{N_{D'}(t_1)} \left[ e^{\lambda(t_1-t_0)} - 1 \right] + \frac{N_{D'}(t_0)}{N_{D'}(t_0)}$$

We still have many unknowns to directly resolve for age, but it is a reasonable presumption that all minerals that crystallize together should exhibit identical ages and identical ND/ND' isotopic ratios. We can then graph the ratio  $y = ND(t_1)/N_{D'}(t_1)$  against  $x = NP(t_1)/N_{D'}(t_1)$  for a number of minerals in a given crystal sample and get the slope of the line. Such a line is called isochronous since it is assumed that all the different minerals crystallized together and are therefore the same age since solidification. Age can then be calculated from this slope as follows:



$$y = x \left[ e^{\lambda(t_1-t_0)} - 1 \right] + y_0$$

$$\frac{dy}{dx} = e^{\lambda(t_1-t_0)} - 1 = \text{slope of line}$$

$$\Delta t = \frac{1}{\lambda} \ln \left[ 1 + \frac{dy}{dx} \right] = \text{calculated age}$$

This calculation is expressed in terms of the decay constant  $\lambda$ , which is related to the half-life of the isotope.

**Particle and Nuclear Physics with Quantum Mechanics predicts that excited elementary particles produce color holograms of matter.**

### 3-Discussion[25]:

We must consider what time would be, that is, time is an intrinsic thing of the Earth's Rotation around the Sun, it exists with the factors Earth and Sun, the human body embodied on Earth by biological factors of the evolution of the animal species, would reality be an illusion of the human mind, but to be realistic we must consider the factor of existence, in which our perception of the reality of the universe is limited to the capacity of the brain, for example, a mental disorder or hereditary genetic disease the person has a vision from a different world, for example, rock and roll singers due to their hallucinogen routine have an eccentric musical perception, which generally differs from Physics in that a healthy and sane person can abstract the reality of science more easily from a different point of view. , but it is not valid in most cases, like Nietzsche, Van Gogh or Kurt Godel or even Albert Einstein who had schizophrenic children or Isaac Newton who has Asperger's, I say sanity, as generally a mental pathology impairs the progress of the intellect, but In most cases, these difficulties prove to be allies, despite the suffering. Well, finally, with time intrinsic to Earth, what would be Time's vision of reality, first what would be life, from your consciousness your world exists and creates reality according to your displacement in three-dimensional space and the special coordinate, With the conditions of the human limit of perceiving the four dimensions, for example through optics, the object you process in your mind is the result of light coming from the sun reflected in the object, an image built on your retina and transported by the cerebral nerves to the central part of the brain, this creates your universe and your reality, Optical Physics, light, object and eye must be highlighted. However, the object is there and exists to create conditions of reality in your universe. From a physical, philosophical and sociological point of view, for example, Jean Baudrillard or Nick Herbert, our universe is a simulacrum and the possible realities of the interpretation of Quantum Mechanics, we create our matrix of existence, considering political, economic and social intentions, these factors influence limit or expand the possibilities of harmony or disharmony, such as working conditions and social well-being, for example, a citizen of the Nordic countries with the highest HDI in the world with an emerging country, consider the factors of inequalities in the two countries and pressures from the market system for survival and vulnerability exposed to unhealthy conditions of violence, drugs and work in precarious conditions. However, Jean Baudrillard's Simulacrum with the reality of Quantum Mechanics, we have eight points of view of quantum reality until arriving at Bell in quantum mechanics, however I speak of the moment in the macroscopic quantum universe firstly from a philosophical point of view, let's consider, there are 5 billion women in the world to 4 billion men, generalizing, in a neighborhood of 10 thousand people, there are 6 thousand women,, assuming that there are 600 single women, there are 600 possibilities of a moment in the spatial fabric to create your universe your world reality with 10 thousand people there is a probability of combinatorial analysis with the factor 10 thousand of combinatorial analysis with a group of friends, let's consider that you choose a cycle of 10 good friends from barbecues at home to clubs and the like, the party factor already influences who goes to the club, the initiative of the place you are going to stay or if all 10 friends are going to the club tonight, here there is already a set of probabilities in these 10 friends, but it is the universe you chose, the monetary availability will influence the drinks and food before and after the party, the cycle you will go get to know the night's psychological conditions of the musicians at the club, the disposition of the club's security guard, the weather forecast and climatic conditions. The club bar is there, the reality created will be in your mind, considering only you, perhaps some things do not necessarily need to exist in your universe. However, does this moment influence the universe of finitely large or infinite dimensions, a predestination of life? This is the matrix of reality, the availability of employment and leisure in your country and city determines your reality and your universe. Your children, if you have one, is determined by your diet and external factors that you insert into your body and even the genetic modification of DNA chromosomes, caused by the industrialization of food, each day that you have intercourse will it be a possibility of children determined in a different genetic way with different genes? This is a moment in the macroscopic universe, which is determined by microscopic biological factors. We now have the much-desired embryonic genetic modification, proposed by physicists and geneticists, which could become synonymous with the exploitation of a superior race to the detriment and exclusion of the masses with normal genetic

evolution. weather forecast and climatic conditions. The club bar is there, the reality created will be in your mind, considering only you, perhaps some things do not necessarily need to exist in your universe. However, does this moment influence the universe of finitely large or infinite dimensions, a predestination of life? This is the matrix of reality, the availability of employment and leisure in your country and city determines your reality and your universe. Your children, if you have one, is determined by your diet and external factors that you insert into your body and even the genetic modification of DNA chromosomes, caused by the industrialization of food, each day that you have intercourse will it be a possibility of children determined in a different genetic way with different genes? This is a moment in the macroscopic universe, which is determined by microscopic biological factors. We now have the much-desired embryonic genetic modification, proposed by physicists and geneticists, which could become synonymous with the exploitation of a superior race to the detriment and exclusion of the masses with normal genetic evolution. weather forecast and climatic conditions. The club bar is there, the reality created will be in your mind, considering only you, perhaps some things do not necessarily need to exist in your universe. However, does this moment influence the universe of finitely large or infinite dimensions, a predestination of life? This is the matrix of reality, the availability of employment and leisure in your country and city determines your reality and your universe. Your children, if you have one, is determined by your diet and external factors that you insert into your body and even the genetic modification of DNA chromosomes, caused by the industrialization of food, each day that you have intercourse will it be a possibility of children determined in a different genetic way with different genes? This is a moment in the macroscopic universe, which is determined by microscopic biological factors. We now have the much-desired embryonic genetic modification, proposed by physicists and geneticists, which could become synonymous with the exploitation of a superior race to the detriment and exclusion of the masses with normal genetic evolution.

In Physics teaching, the issue of the time of the Solar System is not considered in a complex and comprehensive way, the main objective of the study is to question undergraduates and primary school and university teachers in raising students' conceptions in relation to the Earth's time in the Solar System. from the point of view of the most abstract Reality of Physics. These conceptions are very fruitful in the constructivism of physical laws, both classical and quantum. We saw that Stephen Hawking discusses the subject of historical facts, briefly mentioning genetic modification in space travel, but does not use arguments. The mass media diverge from the possibility of reality in trips to the moon and mars and Spielberg films to possible habitations of planets in the solar system and in other galaxies and different star systems, it is seen that the mass media in mass generate an illusion in people and especially students, massifying the news about trips to the moon and Mars and Hollywood films as normal trips to other satellites, largely disregarding the biological conditions of evolution in relation to the human condition limited only to planet Earth, where we are adaptation in food chains that are consequences of the activities of sunlight. As a result, this massification of information and omission of the reality of the theory discussed according to Bachelard's vision, the simple seen in a complex way, builds a totally erroneous conception and affects the development of future students of exact sciences.

Albert Einstein, in his theory of general relativity, argues the possibility of a wormhole for teleportation, a hypothesis that is widely accepted nowadays, but it is worth highlighting that there are questions about the validity of the theory of general relativity, just point out that Einstein started from Mach's principle to argues Special and General Relativity. However, teleportation is possible with space agencies stating that the search for planets identical to planet Earth, but the adaptation condition of the solar star is not expressed, we have to take into account that a planet identical to Earth is possible, but we must take into account the radiation that the possible star emits, not to mention the magnetic field that it generates on the future habitable planet. It is more possible to build a theory, such as general relativity and find a wormhole to inhabit a planet than to travel in space, just remember that in space we have many disturbances and interferences, such as black holes, meteors, constant explosions of stars, interference waves, etc.

We do not know the possibility of what lies ahead in an intergalactic journey, as the starlight signal is from thousands of years ago, making it impossible for the traveler to predict what his future will be in space and it is concluded that a human would never would survive outside planet Earth without the sun and the food that comes from it, as the human organism feeds on the products that come out of the ground and photosynthesis, so to travel in space only by producing a planetary ship with a nuclear sun of energy and field magnetic equal to that of Earth-Sun, otherwise a marked genetic modification in embryos that would be future astronauts adapted to any living conditions and revealing possible immortality to support the journey.

This demonstrates the great need to question students on the question of what time would be like in the solar system and what are the possibilities of life outside Earth. The new era must be one of genetic modification, taking into account that the consequences of industrialization are the Earth that will end, but the human being who will not be able to withstand climate change, not to mention the deforestation of forests, since they were a mitigation of such climate changes, in other words, people are already thinking absurdly and desperately about habitation on the moon and Mars, like NASA, Russia, China and Espase Ex.

Irreversible damage to planet Earth that can only be corrected by manipulating embryos, however insufficient, as the closest star for habitation is alpha-centaur which is very far away and genetic engineering is still new for such a feat of building a human hybrid and there would not be a few, there would have to be several, as humanity has built a gigantic knowledge and to build a civilization on Mars adapted and without risk of extinction it would need several members in the community to build the civilization to the current level of knowledge. Civilization has long insisted that humans are the most rational, opposing this, they must take advantage of the needs of preserving the species through genetic modification, the need for climate consequences and life outside the solar system, this is the complex vision of the subject addresses Sol, which makes the issue simple and viable and gives new horizons to theoretical arguments in the exact sciences and philosophy.

Another question regarding time would be in the quantum sphere, from the classical conception we are limited to planet Earth, but from a quantum point of view, we can teleport through the disintegration of the body into atoms and rebuild ourselves elsewhere in the universe, however if from the point of Quantum view this happens when we enter another point in the universe, it would have to be habitable and with a solar system compatible with ours, as reality does not allow survival in different environments. Well, if we are a projection in a hologram of a black hole we could do everything in the universe, however the reality is different and we have limitations to the solar system, with the human body being just a complex organism, but fragile in different environments. Teleportation seems to be possible, for example, just analyze water and molecules with their Van der Waals and Hydrogen Bridge bonds, perhaps in decades the disintegration of the human body will be possible, but little is questioned in the mass media about the conceptions of students and not encourage Brazilians to this vision of science. These principles gave rise to Quantum Mechanics and the description of the atom based on the article on Brownian movement by Albert Einstein based on the Theories of Molecular Chemistry from the 19th century. The great need of the institutes is the mastery and total understanding of Quantum Mechanics and Particle and Nuclear Physics in the control of **matter and antimatter**.<sup>[33][34]</sup>

#### 4-Final Considerations

This article sought to address the issue of solar time and we concluded that we are just an adaptation on Earth and we must take the limits of evolution from the theory of evolutionist Charles Darwin in relation to the human body and the history of humans on the planet. We analyzed the theories of some exponents of Physics, it is worth highlighting that these theories are of merit to the entire scientific community. We conclude that genetic modification is necessary to inhabit other planets and intergalactic travel. But the main objective of the article is the conceptions of students and society, taking into account basic and university education we see a great need to raise students' conceptions in relation to time and conclude that we are just an adaptation and are limited in planet Earth. This leads students to interest and search for a career in adulthood.

With the basis on Bachelard's theory of seeing the simple as complex, time gains new horizons, thus new possibilities for developing and learning Physics, classical or quantum, this applies to all spheres of Physics and Sciences, in which Brazilian students they hardly question physical and scientific theories. We need the teacher to see theories in a complex way and the teaching of physics and science to be carried out differently, with a vision of complex questions and deductions through different paths. Time and its issue of limitation as a condition of solar radiation and its magnetic field, goes unnoticed and unquestionable in teaching rooms. This article aims to provide a proportional survey of the issue and new possibilities for teaching about time. It is worth emphasizing that the issue addressed about time encompasses several science subjects, which is not discussed in classrooms, this interdisciplinarity, which is rich in knowledge and in the constructivism of science of students in the issue of science and in their curricular background. .

We conclude that there is a great need to see time as a complex theory and its different possibilities of approach, both in Classical Physics and in Quantum Physics, time is the beginning of philosophy that raised questions in the ancient



world and natural philosophy emerged and that after the Renaissance and Isaac Newton created the modern scientific method and contemporary, Classical Physics. In the mid-1900s, Quantum Mechanics emerged, whose main approach in creating its theories was light, coming from the Sun, which governs time on planet Earth. Time was also for primitive civilizations and tribes the fundamental attribute for organizing their civilizations, even the main factor for producing food and continuing harmoniously with their primitive societies. Therefore, seeing time in a complex way, it is much simpler to understand the theories of gravitation, electromagnetics and quantum, with the possibility of speaking philosophically in the teaching of science in a more coherent way.

Time in references and the constancy of light according to restricted relativity are described here, however, the important thing is to emphasize that time is a measure of reference to planet Earth, which is rooted in the Sun, which thus limits the brain's perceptions. human and creates a reality of life. In other words, the human is a rational animal, limited to the evolutionary adaptation of nature, through the food chain, the laws of the prevalence of the strongest, therefore, the human is a body in the solar system, or in the universe, the reality of the human is created in your mind, with well-defined molecular and atomic bonds forming the body, being restricted to the limitation of interpretation of the universe, but does the human interact with waves, branes and the fabric of the universe in a way that allows a break in reality of time from the definition of time from Kepler's laws or is only conditioned by the reality of Earth's time in its translation and rotation. Basically the human brain is limited to nerve impulses that are conditions of chemical substances in the brain, through the behavior of fundamental particles of quantum mechanics of matter and anti-matter that the reality of thought, image formation and creation of the world is made. in the human mind, that is, how the human sees the world, it is concluded that the human has a limitation, if he had more sophisticated processing conditions he would observe the universe and see the properties of Sciences in a more comprehensive way, such as what would be the universe outside planet Earth and even on Planet Earth.

It is concluded that the explanation of the *graviton and gravity* would really say what life is through the theory of Quantum Mechanics, with the arrival of death it would be possible to understand if the human is just an animal that decomposes due to radioactive facts, or if we would have a connection with other dimensions and that the body biological would only be a representation of a condition on Earth, we would have an understanding of Time, as far as we know, through the theory of biology, *food chains*, we are only the result of the evolutionary process of natural selection on Earth with atmospheric conditions and the Sun, since biological characteristics are *hereditary dna inheritances*. *A awareness of human life* It is a chromosomal genetic factor, appealing to the divine and spiritual is not consistent with humanity's efforts over millennia to build science. The reality of life, death would probably be understood with the understanding of the spatial fabric or dark matter of the universe, the interaction of energy and information produced in the brain with the Universe, it is worth highlighting the issues of the equations of General Relativity and the Kaluza Dimensions- Klein, with possible other dimensions, here on Earth the human is an organic biological body, considering the quantum complexity of organic chemistry, this must be taken into account, but the consideration we must emphasize is that the present of time and its chemical and electrical reactions are they just a reality of the present or do they have some interaction with the rest and the energy of the universe for eternity, before we are born we don't remember and we don't know where we came from, but Physics and Quantum Mechanics come in and are fundamental in the study of fertilization animal and human, as well as in the behavior of embryos. The conditions of interactions are complex, as until now we know about cosmic rays and electromagnetic waves or some radiation, an electromagnetic wave from the internet or radio depending on its intensity can cause cancer or other deformations and instabilities in the human biological organism.

*Having understood this brief concept of Time and Restricted and General Relativity, concomitantly with Darwinian evolution, we must now move on to the algebraic manipulations of General Relativity and Quantum Mechanics.* Boosts and Lorentz Transforms applied to General Relativity in the so-called Tensor Algebra.

The ideal for classroom exposure on the subject is to have knowledge of the mathematical tools of Physical theories, with this, there are the conditions for a mental topology, and a related thought focused on explanations and the development of calculation and step-by-step passages.

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Every genuine test of a theory is an attempt to refute it. The possibility of testing a theory implies an equal possibility of demonstrating that it is false. There are, however, different degrees of the ability to test a theory: some are more testable, more exposed to refutation than others; they run, so to speak, greater risks. (Popper).

But, the same objection continues, no theory can conflict with one of its special cases. If Einstein's science seems to make Newton's dynamics false, this is only because some Newtonians were so foolhardy as to claim that Newton's theory produced absolutely accurate results or that it was valid for very high relative speeds. Since they had no proof for such claims, in expressing them they betrayed the standards of scientific procedure. Newtonian theory remains a truly scientific theory in those respects in which, supported by valid evidence, it was at some point considered as such. Einstein could only have demonstrated the error of those extravagant claims attributed to Newton's theory - claims that were never properly part of science. Eliminating these merely human extravagances, Newtonian theory has never been challenged and cannot be challenged.

A very different approach to this whole set of problems was developed by Karl Popper, who denies the existence of any verification procedure<sup>2</sup>. Instead, he emphasizes the importance of falsification, that is, of the test that, in view of its negative result, makes the rejection of an established theory inevitable. The role that Popper attributes to falsification is very similar to that which this essay attributes to anomalous experiences, that is, experiences that, by evoking crises, prepare the way for a new theory. However, anomalous experiences cannot be identified with falsification experiences. In fact, I highly doubt that the latter exist. As we have repeatedly emphasized, no theory solves all the puzzles it faces at any given time. In turn, the solutions found are not always perfect. On the contrary: it is precisely the incomplete and imperfect fit between theory and data that defines, at any given time, many of the puzzles that characterize normal science. If any and all failures in trying to adapt theory and data were grounds for rejecting theories, all theories should always be rejected. On the other hand, if only a serious failure of the attempt at adequacy justifies the rejection of a theory, then Popper's followers need some criterion of "improbability" or "degree of falsification". In developing such a criterion, it is almost certain that they will encounter the same chain of difficulties that has dogged the advocates of the various theories of probabilistic verification. (Kuhn)