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CELESTIAL BODY CONSTANT

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Abstract : *"The energy neither be created not be destroyed but one form of energy can be transformed into another form of energy".*

Key Words*: Celestial body constant, energy, mass, speed of light, universal gravitational constant, joule, height, special theory of relativity,4D Hyper volume.*

Main Text

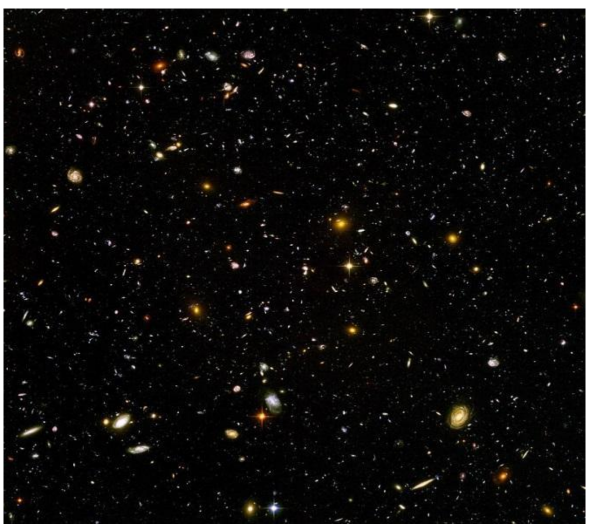
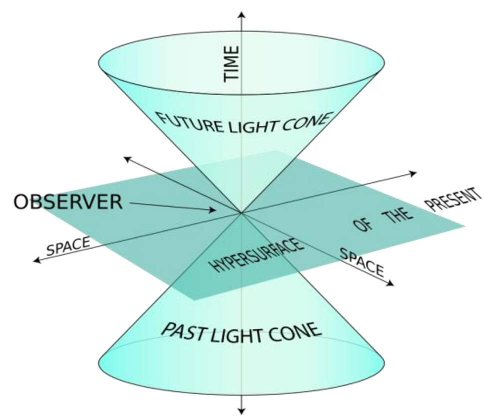


Fig.1, The Hubble Ultra-Deep Field image shows some of the most remote galaxies visible to present technology (diagonal is ~1/10 apparent Moon diameter)[1]

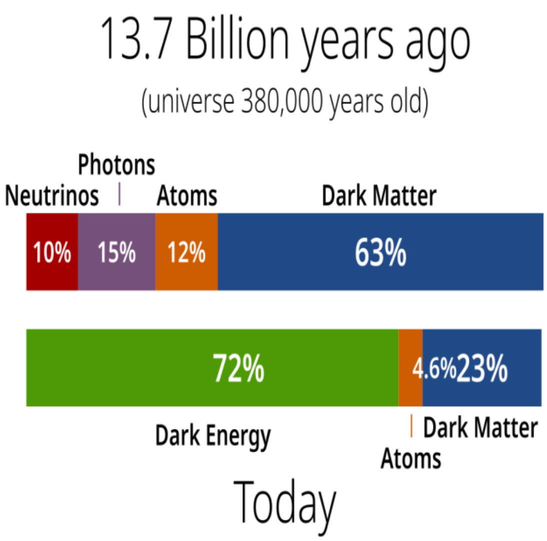
The **universe** is all of space and time[a] and their contents.[9] It comprises all of existence, any fundamental interaction, physical process and physical constant, and therefore all forms of matter and energy, and the structures they form, from sub-atomic particles to entire galactic filaments. Since the early 20th century, the field of cosmology establishes that space and time emerged together at the Big Bang 13.787±0.020 billion years ago[10] and that the universe has been expanding since then. The portion of the universe that can be seen by humans is approximately 93 billion light-years in diameter at present, b



ut the total size of the universe is not known.[3]

An object moves at different speeds in different frames of reference, depending on the motion of the observer. This implies the kinetic energy, in both Newtonian mechanics and relativity, is 'frame dependent', so that the amount of relativistic energy that an object is measured to have depends on the observer. The *relativistic mass* of an object is given by the relativistic energy divided by c^2.[10] Because the relativistic mass is exactly proportional to the relativistic energy, relativistic mass and relativistic energy are nearly synonymous; the only difference between them is the units. The *rest mass* or invariant mass of an object is defined as the mass an object has in its rest frame, when it is not moving with respect to the observer. The rest mass is the same for all inertial frames, as it is independent of the motion of the observer, it is the smallest possible value of the relativistic mass of the object. Because of the attraction between components of a system, which results in potential energy, the rest mass is almost never additive; in general, the mass of an object is not the sum of the masses of its parts.[9] The rest mass of an object is the total energy of all the parts, including kinetic energy, as observed from the center of momentum frame, and potential energy. The masses add up only if the constituents are at rest (as observed from the center of momentum frame) and do not attract or repel, so that they do not have any extra kinetic or potential energy.[note 1] Massless particles are particles with no rest mass, and therefore have no intrinsic energy; their energy is due only to their momentum.

Comparison of the contents of the universe today to 380,000 years after the Big Bang, as measured with 5 year WMAP data (from 2008).[108] Due to rounding, the sum of these numbers is not 100%. Comparison of the contents of the universe today to 380,000 years after the Big Bang, as measured with 5 year WMAP data (from 2008).[108] Due to rounding, the sum of these numbers is not 100%. Fig.3,Comparison of the contents of the universe today to 380,000 years after the Big Bang, as measured with 5 year WMAP data (from 2008).[108] Due to rounding, the sum of these numbers is not 100%.



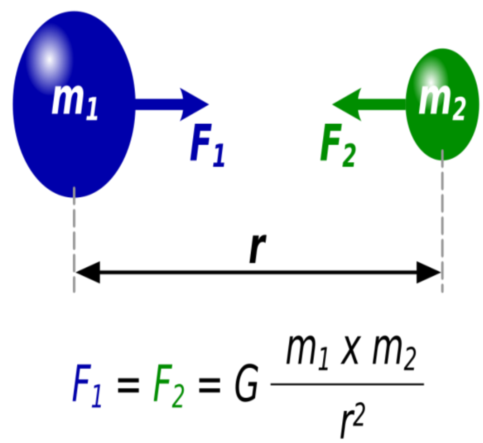
The **gravitational constant** is an empirical physical constant that gives the strength of the gravitational field induced by a mass. It is involved in the calculation of gravitational effects in Sir Isaac Newton's law of universal gravitation and in Albert Einstein's theory of general relativity. It is also known as the **universal gravitational constant**, the **Newtonian constant of gravitation**, or the **Cavendish gravitational constant**,[a] denoted by the capital letter *G*.

In Newton's law, it is the proportionality constant connecting the gravitational force between two bodies with the product of their masses and the inverse square of their distance. In the Einstein field equations, it quantifies the relation between the geometry of spacetime and the stress–energy tensor.

The measured value of the constant is known with some certainty to four significant digits. In SI units, its value is approximately $6.6743\times10^{-11}\ \mathrm{m^3{\cdot}kg^{-1}{\cdot}s^{-2}}$.[1]

The modern notation of Newton's law involving *G* was introduced in the 1890s by C. V. Boys. The first implicit measurement with an accuracy within about 1% is attributed to Henry Cavendish in a 1798 experiment.[b]

Fig.4.,The gravitational constant *G* is a key quantity in Newton's law of universal gravitation



In physics, the **special theory of relativity**, or **special relativity** for short, is a scientific theory of the relationship between space and time. In Albert Einstein's 1905 paper, "On the Electrodynamics of Moving Bodies", the theory is presented as being based on just two postulates:[p 1][1][2]

1. The laws of physics are invariant (identical) in all inertial frames of reference (that is, frames of reference with no acceleration). This is known as the principle of relativity.
2. The speed of light in vacuum is the same for all observers, regardless of the motion of light source or observer. This is known as the principle of light constancy, or the principle of light speed invariance.

The first postulate was first formulated by Galileo Galilei (see *Galilean invariance*).

Four-dimensional space (**4D**) is the mathematical extension of the concept of three-dimensional space (3D). Three-dimensional space is the simplest possible abstraction of the observation that one needs only three numbers, called *dimensions*, to describe the sizes or locations of objects in the everyday world. This concept of ordinary space is called Euclidean space because it corresponds to Euclid's geometry, which was originally abstracted from the spatial experiences of everyday life.

Single locations in Euclidean 4D space can be given as vectors or *4-tuples*, i.e., as ordered lists of numbers such as (x, y, z, w). For example, the volume of a rectangular box is found by measuring and multiplying its length, width, and height (often labeled x, y, and z). It is only when such locations are linked together into more complicated shapes that the full richness and geometric complexity of 4D spaces emerge. A hint of that complexity can be seen in the accompanying 2D animation of one of the simplest possible regular 4D objects, the tesseract, which is analogous to the 3D cube.

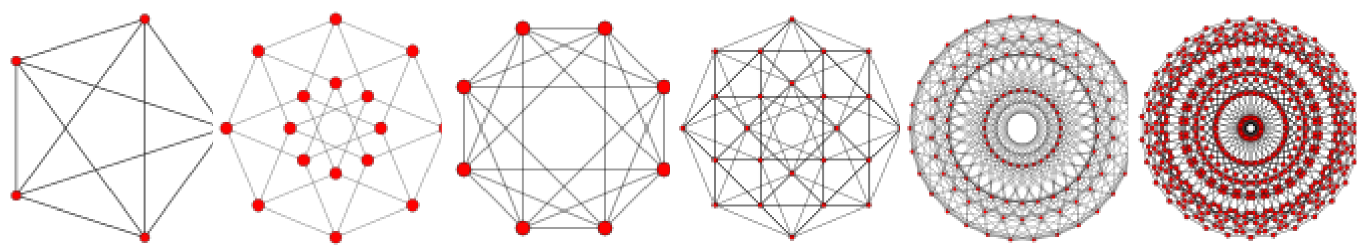
Geometry

The geometry of four-dimensional space is much more complex than that of three-dimensional space, due to the extra degree of freedom.

Just as in three dimensions there are polyhedra made of two dimensional polygons, in four dimensions there are polychora made of polyhedra. In three dimensions, there are 5 regular polyhedra known as the Platonic solids. In four dimensions, there are 6 convex regular 4-polytopes, the analogs of the Platonic solids. Relaxing the conditions for regularity generates a further 58 convex uniform 4-polytopes, analogous to the 13 semi-regular Archimedean solids in three dimensions. Relaxing the conditions for convexity generates a further 10 nonconvex regular 4-polytopes.

Fig.5., Regular polytopes in four dimensions
(Displayed as orthogonal projections in each Coxeter plane of symmetry)

A_4, [3,3,3] B_4, [4,3,3] F_4, [3,4,3] H_4, [5,3,3]



5-cell	tesseract	16-cell	24-cell	600-cell	120-cell
{3,3,3}	{4,3,3}	{3,3,4}	{3,4,3}	{3,3,5}	{5,3,3}

In three dimensions, a circle may be extruded to form a cylinder. In four dimensions, there are several different cylinder-like objects. A sphere may be extruded to obtain a spherical cylinder (a cylinder with spherical "caps", known as a spherinder), and a cylinder may be extruded to obtain a cylindrical prism (a cubinder).[*citation needed*] The Cartesian product of two circles may be taken to obtain a duocylinder. All three can "roll" in four-dimensional space, each with its properties.

In three dimensions, curves can form knots but surfaces cannot (unless they are self-intersecting). In four dimensions, however, knots made using curves can be trivially untied by displacing them in the fourth direction—but 2D surfaces can form non-trivial, non-self-intersecting knots in 4D space.[15] Because these surfaces are two-dimensional, they can form much more complex knots than strings in 3D space can. The Klein bottle is an example of such a knotted surface.[*citation needed*] Another such surface is the real projective plane.[*citation needed*]

Equations(Formula derivation)

"The energy neither be created nor be destroyed but one form of energy can be transformed into another form of energy

E=m1c^2(space)=m2Gh(space) [E=E1=PE2]

E1=m1c^2(in space)

E1=kinetic energy of the body

M1=realistic mass of the body

C^2=speed of light squared in space

PE2=m2Gh(space)

M2=mass of the object

G=universal gravitational constant

=6.67*10^-11 m^3/kg.s^2

H=height in meters

E=E1=PE2

E=m1c^2=m2Gh[m1=m2=1kg]

E=c^2=Gh

E=(3*10^8m/s)^2=6.67*10^-11m^3.m/kg.s^2

E=9*10^64m^2/s^2=6.6710^-11m^4/kg.s^2

E=9*10^64kg/6.67*10^-11m^2

1J=9*10^64kg/6.67*10^-11m^2

Kg.m^2/s^2=1.3493*10^75 kg/m^2

CELESTIAL BODY CONSTANT=1.3493*10^75 s^2/m^4

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CONCLUSION:

In Celestial Body Constant m^4 is the unit of 4D Hyper volume in space the value **CELESTIAL BODY CONSTANT=1.3493*10^75 s^2/m^4** is possible in astrophysics. In astrophysics already having derivation of cosmological constant(^),planch's constant and astronomical unit. Celestial Body Constant is possible if mass of object is not considered.

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