

# Unanswered questions on gravity

Gradually science has succeeded in explaining many phenomena in nature, but one of the most common phenomena, gravity, has not yet released its secret. Many prominent physicists in the world are working persistently with experiments, which should give a hint on what gravity actually is. We want to make it clear, whether gravitation is due to small particles (gravitons) or gravitation waves; from where it comes; does the effect arise when it passes through matter or when it is stopped by matter? These are just a few of the many questions which still remain unanswered.

## Electromagnetic wave theory

The most widespread theory among physicists says that gravitation spreads with the same velocity as electromagnetic waves. Albert Einstein promoted this theory. However, he linked the theory on gravitation with that on the curvature of space. Some scientists were of the opinion that gravitation was due to electromagnetic waves with far higher frequencies than hitherto measured. It has not yet been possible to prove the existence of such gravitational waves.

Altogether it must be regarded as doubtful that gravitation would spread as electromagnetic waves, as we must put the classical questions, from where are the possible waves emitted, which force causes the emission, and furthermore, what happens when the waves are stopped by or pass through matter? If we accept the probability of electromagnetic waves, we must be aware that it is not a question of electromagnetic waves emitted from the earth which cause the gravitation. The stopping of such waves would just add to force away from earth on the particles of matter. So we must conclude that the possible electromagnetic waves must have their origin out in space. But we do not know any electromagnetic waves which possess such an enormous capacity of penetration as gravitation has. As long as we do not have any sure proof of what gravitation really is, we must not exclude any theory but turn our attention to other theories.

## Gravitons and neutrinos

First of all, let us look at the theory of gravitons. We do not have as yet any proof of the existence of this hypothetical particle. Usually it is supposed that gravitons arrive with high velocity from space and exert a pressure on the particles of matter. The objections about electromagnetic waves are valid also for the theory of gravitons.

On the other hand, the theory of the neutrino has an advantage not so much because it gives a more logical explanation than the above-mentioned theories, but because the neutrino actually exists. For instance, a neutrino is created by the splitting of a neutron, which is changed into a proton by the release of an electron as well as of a little particle, namely the neutrino. The neutrino has no electric charge, and its mass is nearly zero. The neutrino seems to be able to penetrate infinitely great amounts of matter; it has been calculated that the neutrino can pass through 10 billion suns placed one behind the other.

However, it must be considered unbelievable that the neutrinos should give rise to a gravitational effect, because as they pass unhindered through infinitely great amounts of matter they can hardly release any energy which can manifest itself as gravity.

Nevertheless, some scientists concentrate on the neutrinos on the basis of the view that an association of two neutrinos gives rise to a gravitational effect.

## Universal free kinetic energy

The theory of a non-granular energy as the origin of gravitation is rather widespread among researchers. Several variations of this theory are found, but only one of these will be mentioned. Briefly, it says that a free universal kinetic energy or a free universal energy of motion is rushing through the universe in all directions with an infinite velocity, a kinetic energy without relationship to particles of matter. When this kinetic energy passes through matter, a small part of it is stopped, by which it adds continually kinetic energy to the particles of matter resulting in rotation and pulsation.

An object near a celestial body will thus receive more kinetic energy from the side which turns away from the celestial body and it is therefore pressed down on the body. Here it should be emphasised that the theoretical function of this free kinetic energy corresponds to the theoretical function of gravitons and neutrinos.

On the other hand it is clear that no final proof has been given of the existence of such a universal free kinetic energy, and neither will it be possible to give such a proof, as the free kinetic energy cannot be detected directly. We can only observe the effects which it brings about in the particles of matter. This theory can be compared with the theories of a universal energy field, universal free energy, etc.

There are people who doubt the correctness of the Einstein theory concerning the course of

time, according to which each moving object has its own course of time. This time is determined by the velocity of the object relative to the velocity of light: with higher speed the course of time is slower and at the velocity of light the course of time will be zero and a clock will not move.

It has now been possible to have this theory confirmed by means of experiments with satellites. The results of the experiments were rather complicated as they did not correspond to the calculations. According to the calculations, in all cases, the clock in the satellite should show a lesser time than the control clock on the surface, but sometimes the clock in the satellite showed a greater time than the control clock. Of course, we could take into consideration the fact that a satellite with an orbit against the rotation of earth might move less than the surface of the earth relative to a static point in space, so it must also show a greater time. In spite of this, all experiments have indicated clearly that the course of time depends upon the magnitude or intensity of the gravitational field in such a way that the stronger the gravitational field, the quicker the time passes. It can also be said that variations of the course of time are due to two different factors — a "dynamic" factor and a "kinetic" factor. The dynamic factor corresponds to the movement of the object, and the kinetic factor to the intensity of the gravitational field in which the object is moving.

**Light and gravitation:** That light is influenced by gravitation to a certain extent is well known from the phenomenon that light is deflected in its path when it passes near a celestial body, for instance, the sun. But as the photons have neither mass nor electric charge, the effect

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must be due to an asymmetry of the universal energy field, or space-time-continuum, which is the medium for the propagation of light.

**Gravitational frequency shift of electromagnetic waves:** By experiments, among others, with satellites, it has been established that the frequencies of electromagnetic waves vary slightly in accordance with the intensity of the gravitational field through which the waves pass. The variations follow this pattern: when the electromagnetic waves are emitted from the weaker gravitational field around the satellite, they arrive at the surface of earth with a higher frequency than they had when emitted; and when the electromagnetic waves are emitted from the stronger gravitational field on the surface of earth, they arrive at the satellite with a lower frequency than they had when emitted.

**Universal constant of "c":** Sometimes we have seen people doubt whether "c" is really a universal constant, as they claim that the velocity of light varies. What is constant is the velocity of light per second (or per any unit of time). Here we have to take into consideration that the course of time varies with both the dynamic factor and the kinetic factor which, seen from a static universal point, means that the second has not the same length everywhere. As the velocity of light always follows exactly the course of time in such a way that a movement with the velocity of light indicates a course of time of zero, so the product of the velocity of light and one second will always remain constant. Seen from a static universal point it means that the velocity of light is lower in a weaker gravitational field and higher in a stronger gravitational field.

## The formula: $E = m \times c^2 \times g/G$

Some might wonder why this new formula is introduced, but the facts that the electromagnetic waves vary according to gravitation, and that both the course of time and the velocity of light vary according to gravitation, must inevitably make us put the question whether also the energy of particles of matter should vary according to gravitation. The Einstein formula  $E = m \times c^2$  is generally found, and we must try to imagine the considerations which might have led to the application of  $c^2$ . When the light is moving with the same velocity as the spreading velocity of time, so the reason to the emission of light must be directly related herewith. Light and other electromagnetic waves are in fact matter with nearly infinite small mass. Therefore we can imagine that the unknown force which keeps together the particles of matter is counterbalanced by an energy of the particles corresponding to 186,000 miles a second, and by that light is emitted. As this unknown force determines both the velocity of light and the course of time being as two secondary effects, it is reasonable to presume that if one combined those two secondary effects (velocity of light and one second) and squared the result, one would arrive at an expression of the otherwise unknown force which the particles must attain during light emission, and which therefore also must be determined for the con-

tents of energy in the particles of matter. But we know now that variations in this unknown force take place in accordance with variations in the gravitational fields, but as these variations act equally on the two secondary effects, inasmuch as the velocity of light becomes just as much higher as the second becomes correspondingly shorter, this means that

the product  $c$  or the square of  $c$  remains continually constant in spite of the fact that the conditions for the contents of energy in the particles of matter have changed. The most correct way to express the contents of energy must thus be  $E = m \times c^2 \times g/G$ , where 'g' expresses the value of the local gravitation field and 'G' the value of the universal gravity constant, because this new formula makes adequate allowance for variations of gravitation.

## Gravity changes energy levels in space

Changes in the strength of the local gravitation field will cause corresponding changes in the energy levels of atomic particles and cause changes of energy potentials in satellites sent from the surface of earth into space or to the moon. The practical use of the formula depends upon empirical experiments showing the exact emission of energy from the atomic particles placed in the normal gravity field of the earth and experiments showing the exact emission of energy from the atomic particles placed in the gravity field of the moon and also atomic particles placed in outer space.

When an energy potential is sent to the moon from earth, the energy potential of the charge will decrease, and if the energy potential is close to the minimum charge for emission of electromagnetic signals, the energy potential could decrease under the minimum level and the emission of electromagnetic signals will stop. This actually happened several times in the beginning of placing instruments on the moon and in outer space. However, after a certain time the energy potential of the charged particles of the batteries adjusted themselves to the gravity field of the moon in such a way that the energy potential again increased to a level over the minimum and the instruments started again broadcasting electromagnetic signals to earth. The signals appeared to be stronger than in the beginning when they arrived in the gravity field of the earth quite in accordance with the formula. The solution was to supply the instruments with much stronger batteries and that was possible due to improved rocket technology.

## Change in critical mass of atomic bombs

The most evident and important effect of changes in energy levels due to changes in the gravity field is the changes of the critical mass of atomic bombs. The critical mass is of course a military secret, but we can give an example. If the critical mass of a radioactive material is 65 kg, and you have two times 35 kg completely isolated thus having 70 kg, the atomic bomb will explode. In a stronger gravity field deep under the surface, the critical mass could be 60 kg, and in a weaker gravity field in the stratosphere the critical mass could be 70 kg. Thus, the atomic bomb deep under the surface will explode earlier than on the surface, and the atomic bomb in the stratosphere later and at a lower altitude than calculated. This actually happened to the U.S. A-bomb test over the Johnston Island. The bomb did not explode at once but fell down towards the surface and finally did explode with a much stronger effect than calculated.

The Indian A-bomb was exploded very deep under the surface, and it did explode much earlier than planned. Also the French A-bomb tests deep under the Mururoa Island in the South Pacific have several times caused stronger and earlier explosions. In order to avoid possible catastrophes the critical mass of radioactive matter must in future be calculated on the basis of and including the strength of the local gravity field. Also the energy release from radioisotopes and radioactive energy elements in satellites is influenced by the gravity fields in which they are placed.

## Mach's principle and expanding universe

Mach's principle indicates that the gravitational constant is determined by the total mass of all matter in the universe. The most distant celestial bodies move apparently with a velocity close to that of light. If we suppose that the velocity of gravitation is many times higher than that of light, the gravitation will decrease continually at a greater rate than the presumed expanding of the universe. We cannot be sure that the red shift of light from distant galaxies should be interpreted as a Doppler effect, as the reason could be a shift due to variations of the intensity of gravitation.

It is of importance once more to emphasise the fact that variations in the intensity of gravitation cause corresponding variations in the velocity of light in course of time, and in the energy contents of electromagnetic waves. The new formula gives a much better understanding of theoretical physics which, in some cases, can be crucial to the safety of human lives.

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