Original Solution of Gravity is without Gravitational Waves

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Abstract
Original solution of gravity motion is curved 4 dimensional cosmic space. Massive objects move into direction of higher curvature of space. Quantum gravity introduces idea that cosmic space is made out of grains of Planck size. If space has granular structure one can consider space also has its density. According to the second low of thermodynamics in the universe distribution of energy tends to be homogeneous. More mass in given volume of quantum space less space is dense. Less space is dense more space is curved. Massive objects move always into direction of lover density in higher curvature of quantum space. Gravitational motion of massive objects is result of change of density of quantum space. Change of density of quantum space is a physical basis for change of its curvature.

Key words: gravitational motion, quantum space, curvature of quantum space, density of quantum space, gravitational waves, space-time, time, run of clocks

Introduction

First law of thermodynamics considers energy cannot be created and not destroyed. In the universe as a whole amount of matter energy Em and amount of quantum space energy Es is constant.

$$\sum Em + \sum Es = K$$

Thermodynamics lows show that distribution of energy in any system tends to be homogeneous. Because of homogeneous distribution of energy more mass is in a given volume of quantum space less dense. Less dense is space more space is curved. Change of density of quantum space corresponds in General Theory of Relativity to change of curvature of space. Einstein curvature tensor in General Relativity $G\mu\nu$ is in relation with density tensor $D\mu\nu$ of quantum space by equation:

$$D\mu\nu = \frac{1}{G\mu\nu} = \frac{c^4}{8\pi G * T\mu\nu} \quad \text{wich becomes in geometrized units} \quad D\mu\nu = \frac{1}{8\pi T\mu\nu} \tag{1}$$

Because of thermodynamics low of homogeneous distribution of energy massive objects move always in direction of lover density of quantum space. Earth has tendency to move to the centre of the sun because density of quantum space is lowest at the centre of the sun. Gravitational motion of massive objects is result of change of density/curvature of quantum space. In the area where there is no change of density/curvature material object will not move as for example in a centre of stellar object or in empty quantum space.

presence of mass $\rightarrow$ change of density/curvature of quantum space $\rightarrow$ gravitational motion

With quantization of cosmic space it is difficult to imagine how a grain of space could have three spatial dimensions and one temporal dimension. In 1949 Gödel suggested that fourth dimension of space-time is spatial too. Out of Gödel vision comes that time is run (thick)

of clocks in quantum space. The fundamental arena of the universe is the quantum space. With clocks we do not measure time as a fourth dimension of quantum space. Experimental data confirms that with clocks we measure a frequency $\gamma(s^{-1})$, velocity $v(ms^{-1})$ and numerical order $n...n+1...n+2...$ of material changes running in a quantum space. Space-time is mathematical model merely were fourth coordinate X4 is spatial too (2).

Discussion

In General Theory of Relativity original solution for gravity is change of curvature of cosmic space. In original papers from 1916 Einstein did not mention gravitational waves. This idea arises few months later. Einstein introduces gravitational waves as space-time perturbations (3). Here wee see that there is no need to introduce gravitational waves as a physical entities that carries gravity. Gravitational motion of massive bodies is result of change of density/curvature of quantum space. This model works perfectly without gravitational waves.

Loinger considers that gravitational waves are only hypothetical and do not exist in a physical world:" The gravitational waves are non-physical sinuosities generated, in the last analysis, by undulating reference frames" (4,5).

In 1960s, Joseph Weber began the experimental work to detect gravitational waves. He was essentially alone in this field of research. Then, the theoretical work of Wheeler, Bondi, Landau and Lifshitz, Isaacson, Thorne and others and the experimental work of Weber, Braginski, Amaldi and others opened a new area of research in this field (6).

Gravitational waves has been not detected yet: ”To search for gravitational waves in lab classical or quantum mechanical detectors can be used. Despite the experiments ofWeber (1960, 1969) and many others (Abramovici et al. ,1992; Abramovici et al. ,1996; Braginskij et al., 1972; Drever et al., 1973; Levine and Garwin, 1973; Maischberger et al.,1991; Tyson, 1973) and theoretical calculations and estimations (Braginskij and Rudenko, 1970; Harry et al. , 1996; Schutz, 1997) gravitational waves have never been observed directly in lab” (7).

Today in physics one operates most with mathematical terms. Awareness is needed of how much these terms correspond to physical reality. Gravitational waves are such example. An opinion prevails that they exist as a physical reality and their direct detection is a question of few years. Nobel Prize was delivered for discovery of diminishing of rotation speed of binary neutron stars PSR1913+16 which is explained with gravitational radiation. Gravitational radiation (A) should diminish mass of the stars (B), and diminishing of the mass of stars causes decreasing of rotation speed (C). You cannot explain C and B with A until A is observed directly. This is the basic rule of scientific research.

Here another solution for diminishing of rotation speed of neutron stars is given: speed diminishes because in the centre of neutron stars and black holes mass of is transforming into quanta of space. In the universe singularities are transformations of mass into quantum space and opposite. Transformation "mass-quantum space-mass" is in a permanent equilibrium with no beginning and no end (8).

Conclusion

In today’s physics the conviction still prevails that gravity works directly between massive bodies via hypothetical gravitational waves. Research here shows that mass changes density/curvature of quantum space and this change generates gravitational motion. There is no direct attraction force between massive bodies. Gravity motion is result of dynamics between mass and density/curvature of quantum space.

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