Original Solution of Gravity is Without Gravitational Waves

Amrit S Sorli *

Original solution of gravity motion is a curved four dimensional cosmic space. Massive objects move into direction of higher curvature of space. Quantum gravity introduces the idea that cosmic space is made out of grains of Planck size. If space has granular structure one can consider that it also has density. More mass in given volume of quantum space less space is dense. Less space is dense more space is curved. Massive objects always move in the direction of lower density and higher curvature of quantum space. Gravitational motion of massive objects is the result of change of density of quantum space. Change of density of quantum space is a physical basis for change of its curvature.

Author pls. clarify

Keywords: Gravitational motion, Quantum space, Curvature of quantum space, Density of quantum space, Gravitational waves, Space-time, Time, Run of clocks

Introduction

Quantum gravity describes cosmic space as granular. Space is made out of Quanta of Space(QS) QS volume of Planck (Rovelli, 2003). The prevalent idea in physics is that cosmic space has three spatial dimensions and one temporal dimension. It is difficult to imagine that QS has three spatial dimensions and one temporal dimension.

According to Gödel, time is not part of space. Fourth coordinate of space-time is spatial too (Yourgrau, 2006). Experimental data confirms Gödel's vision. With clocks we measure a frequency $g(s^{-1})$, velocity $v(ms^{-1})$ and numerical order $n \ldots n + 1 \ldots n + 2 \ldots n + 3$ of material changes that occur in a quantum space. Physical time that is run of clocks ('tick' of clocks) is not a part of quantum space in which change occurs. With clocks we do not measure time as a fourth dimension of space. Quantum space itself is timeless. Space-time is a mathematical model merely where the fourth coordinate X_4 is a product of imaginary number i, light speed and number t that represents 'tick' of clock: $X_4 = i_x c_x t$.

Physical time is run of clocks and is derived from motion. Motion is a primary physical reality. Run of clocks is man made secondary physical reality for measuring motion in timeless space (Amrit S Sorli, 2009).

The original solution of gravity in General Theory of Relativity is a curved four dimensional cosmic space. Massive objects move into direction of higher curvature of space. Quantum gravity introduces the idea that cosmic space is made out of grains of Planck size. If space has granular structure, one can consider space also has density. More mass in a given volume of quantum space less space is dense. Less space is dense more space is curved. Massive

Author pls. clarify

* Scientist, Scientific Research Centre Bistra Ptuj, Slovenia. E-mail: sorli.bistra@gmail.com

objects always move in the direction of lower density in higher curvature of quantum space. One can imagine the density/curvature of quantum space as the density of material on which is an iron ball representing a stellar object. Under the ball, the material is curved, stretched and less dense. Gravitational motion of massive objects is a result of change of density/curvature of quantum space. In the area where there is no change of density/ curvature, the material of the object will not move, for example, in the centre of a stellar object or in an intergalactic quantum space.

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

Change of density of quantum space corresponds in General Theory of Relativity to change of curvature of quantum space. Einstein curvature tensor in General Relativity $G_{\mu V}$ is in relation with the density tensor $D_{\mu V}$ of quantum space by equation:

$$D_{\mu V} = \frac{1}{G_{\mu V}} = \frac{c^4}{8_\pi G * T_{\mu V}} \text{ which becomes } D_{\mu V} = \frac{1}{8_\pi T_{\mu V}} \text{ in geometrized units}$$

Discussion

In his original papers from 1916, Einstein did not mention gravitational waves. This idea arises few months later. Einstein introduces gravitational waves as space-time perturbations (Einstein, 1916). Here we see that there is no need to introduce gravitational waves as physical entities that carry gravity. Gravitational motion of massive bodies is a result of change of density/curvature of quantum space.

Loinger considers that gravitational waves are only hypothetical and do not exist in the physical world: "The gravitational waves are non-physical sinuosities generated, in the last analysis, by undulating reference frames" (Loinger, 1998 and 2004).

In the 1960s, Joseph Weber began his experimental work to detect gravitational waves. He was essentially alone in this field of research. Later, theoretical papers of Wheeler, Bondi, Landau and Lifshitz, Isaacson, Thorne and others, as well as experimental work of Weber, Braginski, Amaldi and others opened a new area of research in this field (Ciufolini and Gorini, 2004).

Gravitational waves have not yet been detected. "To search for gravitational waves in a lab, classical or quantum mechanical detectors can be used. Despite the experiments of Weber (1960 and 1969) and many others (Braginskij *et al.*, 1972; Drever *et al.*, 1973; Levine and Garwin, 1973; Tyson, 1973; Maischberger *et al.*, 1991; Abramovici *et al.*, 1992; and Abramovici *et al.*, 1996) and theoretical calculations and estimations (Braginski and Rudenko, 1970; Harry *et al.*, 1996; and Schutz, 1997), gravitational waves have never been observed directly in lab" (Hans-Joachim Schorn, 2001).

Dynamic Equilibrium of the Universe

The idea proposed here is that in black holes inside Schwarzschild radius, $r_s = \frac{2GM}{c^2}$, where density of mass is extremely high and density of space is extremely low and mass is

disintegrated in QS. Quanta of space are 'fundamental elements' of energy that build up elementary particles.

In outer space where quantum space is extremely dense, QS forms cosmic rays. "Enigmatic for many years, cosmic rays are now known to be not rays at all, but particles, the nuclei of atoms, raining down continually on the earth, where they can be detected throughout the atmosphere and sometimes even thousands of feet underground" (Michael W Friedlander, 2000).

Transformation "mass-quanta of space-mass" is permanent. Universe is a system which is in a permanent dynamic equilibrium without a beginning and with no end.

According to the first law of thermodynamics, energy of the universe can neither be created nor destroyed, it can only be transformed. The sum of energy in the universe is constant.

$$\sum E_u = K$$

Expanding of the universe is the result of high density of quantum space in outer space. The expansion of high dense space is similar to a high dense gas. With a continuous creation of elementary particles in outer space, the amount of mass in the universe increases and cosmic space gets less dense. This process is more intensive as transformation of mass in QS at the centre of black holes.The process of continuous creation of particles in outer space increases the presence of mass in the universe, ends expansion and starts contraction. Universe shrinks in a huge back hole where mass will be transformed into QS. The density of quantum space will extremely increase leading to the new 'big bang'. Expansions and contractions of the universe are cyclic. In Vedas they called it 'Breathing of the Brahma'.

Increasing entropy observed in the universe is only a part of the universal dynamics. Entropy (S) of the universe as a whole is zero.

$$S_u = 0$$

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. Gravity rules permanent cosmic dynamics of expansion and contraction with transformation of mass in quantum space and vice versa.

References

1. Amrit S Sorli (2009), "Time is Derived from Motion", The Icfai University Press, *Journal of Physics*, Vol. 2 No. 4, available at http://www.iupindia.org/Physics.asp
2. Ciufolini I and Gorini V (2004), Gravitational Waves, Theory and Experiment (An Overview), available at http://bookmarkphysics.iop.org/fullbooks/0750307412/ciufoliniover.pdf

3. Einstein A (1916), Sitz. Ber. Kon. Preus, Ak. Wiss, p. 688

4. Hans-Joachim Schorn (2001), "New Effect for Detecting Gravitational Waves by Amplification with Electromagnetic Radiation", *International Journal of Theoretical Physics*, Vol. 40, No. 8.

RA pls. chk. the underlined references

5. Loinger A (1998), "The Gravitational Waves are Fictitious Entities", available at http://xxx.lanl.gov/abs/astro-ph/9810137

6. Loinger A (2004), "The Gravitational Waves are Fictitious Entities-II", available at http://arxiv.org/vc/astro-ph/papers/9904/9904207v1.pdf

7. Michael W Friedlander (2000), *A Thin Cosmic Rain —Particles from Outer Space*, Harward University Press, available at http://www.hup.harvard.edu/catalog/FRITHI.html

8. Rovelli C (2003), "Loop Quantum Gravity", *Physics World*, November.

9. Yourgrau P (2006), "A World Without Time: The Forgotten Legacy of Godel and Einstein", *Amazon*, available at http://findarticles.com/p/articles/mi_m1200/is_8_167/ai_n13595656

Reference # 58J-2010-04-xx-01