

Hole teleportation by help of gravitational field

C. Z. Leshan con_phys@hotmail.com

For instantaneous teleportation we must send a body outside of universe by curving space-time with gravitational field and creation of Poincaré non-Euclidean model of universe. There are no causality violation in hole teleportation. After substitution of information carrier the causality violation (CV) disappears. The feedback between “cause” and “effect” is impossible because teleportation between moving frames is forbidden by conservation laws. It is very strange that CV depends from spatial position of observer toward teleportation events, as time depends from speed and gravity only. It means that CV is not motion backward in time but an optical illusion that disappears after substitution of information carrier or complete data processing by observers. The teleportational principle of causality was proposed for superluminal processes. The hole radiation of massive body has all properties of gravitational field. The mass of particle is a parameter describing ability of a particle to interact with hole vacuum and emit “their” holes, the more holes emit particle for a time unit, the more is mass.

For teleportation can be applied the fact of a finiteness of universe as whole. We must send a body outside of limited universe by curving space-time so that start point coincides with endpoint. For it is necessary to create around a body a closed surface consisting from vacuum holes for a short time dt . After time dt the volume occupied by body in teleportation station should be empty because the body cannot exist outside of universe. Thus body exists already in another point of universe and teleportation was successfully completed. The time dt is necessary to avoid returning a body to start point. Energy expenditure would be necessary for the curvature of space-time but not for the movement of the body from start point to endpoint.

The geometry inside of closed hole surface strictly coincides with model of non-Euclidean universe proposed by A. Poincaré. He proposed an imaginary world limited by a sphere (circle) where all distances decrease from centre to border. For internal observer the distance between centre and border becomes infinite. This place is completely isolated system toward external universe because not exist radiation able to penetrate through hole in space and time.

Hole teleportation phenomenon can be explained from different points of views:

Definition 1. The method of movement where body is transferred from point A to another point B under laws of uniform and rectilinear movement except for time $T=0$, and through obstacles between A and B is called hole teleportation (HT). It is superanalogue of uniform and rectilinear motion.

Definition 2. HT is a motion method where body is sent outside of universe into zero-space after that one reappears instantly in another point of the real universe.

Definition 3. HT is a motion method when the body from point A gets to another point B by curving space-time (creation of Poincaré model of non-Euclidean universe) vacuum holes so that points A and B coincide in space and time.

Definition 4. HT is a motion method, where the body first is completely isolated from the external universe by creation of Poincaré non-Euclidean model of universe, after that body disappears in order to reappear instantly in another point.

As was described in definition 1, hole teleportation has all properties of uniform and rectilinear motion except for time and penetration through obstacles. It means that the energy expenditure for teleportation at any distances will be always equal to zero. Then uniform and rectilinear motion of body can be between two points with the same force fields only, consequently teleportation would not be possible if the fields of force are different at the two points. In fact a teleported body can appear on one of points of the trajectory. But our space is not Euclidean as gravitational fields exist in every point therefore ideal uniform and rectilinear motion don't exist, consequently this virtual trajectory passes through all points with the same force characteristics.

The transmitter of matter can be with internal or external hole production. First case presents a stationary transmitter with room for teleportation, and second presents a mobile station that produces vacuum holes around itself that allow to teleport repeatedly station to other points of universe. The

teleportation performs in vacuum because gas molecules hinder materialization of teleported body. If body appear in an atmosphere then gas molecules must move with superluminal velocities that is forbidden by relativity.

There are no causality violation at address teleportation of bodies faster than light. All examples from references contain errors [1,2,3,4]. The absence of causality violation at instantaneous teleportation can be proved by following: 1. The causality violation disappear after substitution of information carrier. Below is described an experiment were after substitution of light signals by teleportation one, CV disappear. The causality principle does not require to use as information carrier the light signals only. If after signal substitution CV will disappear, it means this CV is an imaginary effect only that depend from selection of information carrier and properties of light signals.

Let there are three frames of reference A, B and C that are fixed relative each other. All clocks from A, B, and C are synchronised by Einstein method with light signals.

Let we teleport a body from point A to B. As is known the event of disappearance of body in point A is strictly simultaneous with event of appearance of body in point B on local clocks. The causality violation was described in references as registration by moving observer (relative teleportation events) of signal from "effect" before "cause". But this light signals transfer information about teleportation events to observer only, therefore it is possible to substitute light carrier of information by teleportation signals.

Let at moment of disappearance of body in point A another teleportation station is powered up that teleports this information to point C. Also at the moment of appearance of body in point B this information is teleported to point C. In point C at the moment of reception of teleportation signals is emitted light signals with all information about teleportation events (spatial and temporal location) in points A and B. Thus all the observers moving toward C, A, B will receive all information about teleportation events. But there are no causality violation, all observers will see both signals simultaneously. You see, after substitution of information carrier the CV disappeared. It means that CV is a optical illusion only and not motion backward in time.

2. It is very strange that CV is observed in one moving relative teleportation events frames and are not observed in other moving frames. It means that CV depends from geometrical (spatial) position of observer toward to teleportation events. But time retardation depend only from motion speed and gravity fields and not depend on observer spatial position toward to events. Therefore this CV is imaginary and has no anything common with motion backward in time. The observation of one signal (from effect) before another (from cause) is only optical illusion that depend from selection of information carrier.

3. In [5] was proved, that all moving relative teleportation events observers make an errors during data processing. They see one signal before another but declares that effect was occurred before cause. The causality principle ask from observers the information about sequence of events «cause» and «effect», not information about sequence of signals registration. The sequence of events in time can't depend strictly by sequence of signal registration. It cannot be called «direct measuring» and not «data processing» because processing is not terminated. In [5] was shown that after correct data processing the CV disappear. 4. It is impossible for «effect» to influence the «cause» in instantaneous teleportation. The feedback is impossible because teleportation between moving frames of reference are forbidden by impulse and energy conservation laws. The teleported body save the impulse, it means that one appear in the same frame (connected with start point). Therefore moving observer cannot influence teleportation events, because he cannot be teleported to teleportation events.

The actual causality principle was deduced from observations of sublight processes, therefore we cannot know as should look one in superluminal world. For example can exist a teleportation causality principle which could look so: 1. The event "effect" can not occur before "cause". Or another definition: 2. The event "cause" can occur before or simultaneously with event "effect". This causality principle takes into account the existence of instantaneous teleportation.

Pay attention that the curvature of space-time called Puncare non-Euclidean universe can be created by gravitational field only. Therefore for teleportation is important to research a hole theory of gravitation. Vacuum hole has almost all graviton properties except for spin: mass $M=0$, all charges are equal to zero. The vacuum hole is a single particle in physics able to explain the curvature of space-time and time retardation. Therefore it is possible to explain gravitation as hole radiation of material bodies.

All heavy particles interact with hole vacuum and emit “their” holes (This process is described below). If we collect all holes emitted by body during a second, we obtain a hole with volume $V = 4\pi G_v M$ and radius $r^3 = 3G_v M$; here $G_v = 6.672 \cdot 10^{-11} \text{ m}^3/\text{kg}$ is coefficient for transfer of mass in volume., that numerical is equal to gravitational constant but have other measure – m^3/cg . Then universal gravitational law can be formulated in following manner:

$$F = G_m \frac{r_1^3 r_2^3}{R^2} \quad R \gg r \quad (1)$$

Where $G_m = 1,665 \cdot 10^9 \text{ H/m}^4 (\text{kg} / \text{m}^3\text{s}^2)$ - a metric gravitational constant, $(1 / 9G)$

From formula (1) follows that G_m is a force of attraction between two points that emits during a second a stream of holes with summarized volume V_0 , which is a sphere with radius one meter.

The main parameters of hole radiation as summarized volume V_0 can be calculated without use of notion “mass” or Newton gravitational law proceeding from geometrical reasons only. If we have measured free fall acceleration g near body, the summarized volume of holes V_0 emitted by heavy body during a second can be calculated by formula:

$$V_0 = V(R) - V(R - g) = 4 \pi (R^3 - (R - g)^3) / 3; \quad R \gg r_0 \quad (2)$$

The hole radiation of heavy bodies able to curve space-time. It is proved by a simple example. If we shall increment gradually the concentration of vacuum holes in space, the distance between two points must decrease and also will be time retardation, as in extreme case when space consist from holes only the distance between every points will be equal to zero and time flows indefinitely slowly. The same effect occur in closed hole surface, where the size of observer is decreases near hole surface.

The interaction between material particles and hole vacuum

Let there is material particle N in hole vacuum. Around N continuously appear and disappear vacuum holes. Let’s consider interaction between N and one vacuum hole. The appearance of vacuum hole means, that near particle appeared a zero-space which is filled by all surrounding particles (by N and elementary volumes dv). Therefore after hole appearance N and dv will move to hole centre. Let’s consider now a case when two vacuum holes appear simultaneously from opposite sides of N . Particle N can not move simultaneously to the opposite sides, therefore N will be fixed while vacuum holes will be filled by dv only. As dv move to N , it means that holes move to opposite side. It is similar on electric current where electrons move to one direction, and holes in opposite. As vacuum holes continuously appear around N , it means that N will emit a flux of holes continuously. It is necessary to notice, that dv move to N not only in the second case, but also in the first.

Massive material bodies emit a flux of holes by each component particle. The speed of motion of vacuum hole in space should be equal to slam speed of vacuum hole which is equal to speed of light. Mass definition. The mass of a particle is a parameter describing ability of a particle to interact with hole vacuum and emit “their” holes, the more holes emit particle for a second, the more is mass.

References

1. <http://www.hoboes.com/pub/Role-Playing/Future/Realistic%20FTL/Paradox%20Example>
2. *I.P. Terleckii*, – Electrodynamics, M.:High school, 1990, p. 227
3. *Jason W. Hinson*, – Relativity and FTL Travel, http://www.physics.purdue.edu/~hinson/ftl/html/FTL_part4.html
4. *S. Lilly* – Relativity for everyone, M.:Mir, 1984.
5. *Leshan C.* -- There are no causality violation at address teleportation of bodies faster than light, Hole physics, teleportation and levitation, V1,N1,August 2001