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Motion and Transposition in conservative fields

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Abstract- From its earliest time mankind met gravitation as natural phenomenon. Scientists and scholars from different times gave different explanation about its nature and way of action. But even for today there is not any suitable theory that explains that phenomenon completely. From my point of view that happened because all our experience depends from gravitation field and all our observations for natural phenomena and our experiments has relation to surrounding field of gravitation. That field ever affects all experience of humankind directly or indirectly.

To understand gravitation better we need to go out of gravitational field and see which processes exist beyond the limit of gravitation. This essay is dedicated to such analysis and digs deeper some key aspects of the theory that was published recent year (2011)[1].

Index Terms- Conservative fields, space, time, motion, transposition, Z-Theory

As it well known from the time of Mr. Newton gravitational attraction force magnitude can be calculated using following equation.

$$F_g = G \cdot \frac{m_1 \cdot m_2}{r^2} \qquad (1)$$

Because that force acts along the line that connects the centers of interacting bodies, motion of the object with lesser mass around the body with higher mass in perpendicular direction to that force changes nothing in energy of whole system and field itself. In astronomy they usually refer that type of motion as a circular trajectory. You can see example of that trajectory in the Figure A.

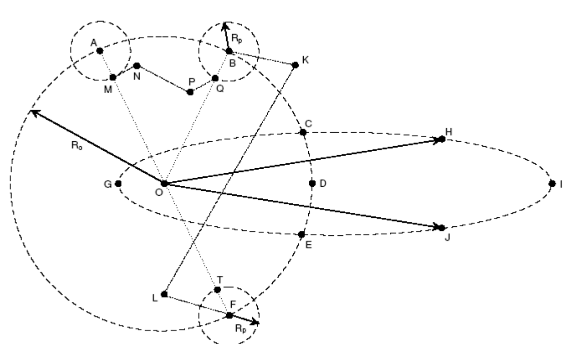

Figure A

Points mentioned in the figure have following meaning. O is the center of the orbiting body with large mass m_1. Next body with lesser mass m_2 ($m_2 << m_1$) uses circular orbit around first body. That orbit is plotted by hyphen line A-B-C-D-E-F. Obviously that is a circle with radios R_o. At each point of location radios R_p represents radios of the body with mass m_2.

The other body with mass m_3 ($m_3<m_2$) uses elliptical trajectory G-C-H-I-J-E in plain of the orbit of the body with mass m_2. The system drawn in the picture A can be used as abstract one or as close presentation of the Solar system. For example we have a good model of the Solar system with the Sun located at the point O, the Earth using a trajectory close to the circular trajectory and a comet using the elliptical trajectory.

Gravitational field is able to change energy of moving object only if that object changes distance from the body that produces gravitational field. In that case a component motion appears along direction of gravitational force and the field begins to produce some work by changing energy of the object. Because magnitude of that force depends only from distance between the body and the moving object any relocation of the object changes it energy only in case when the object changes its *distance* from the body.

As a result energy of an object moving in gravitational field of the body by *any* trajectory depends only from distance between the object and the body at the first and the last points of the object's trajectory. Hence as long as the object keeps same distance from the body at any two points of *any* trajectory nothing changes in energy of whole system (E) as well as in energy of the object and in any of its component as kinetic (E_K) and potential (E_P) energy.

$$\Delta E = 0,\ \Delta E_k = 0,\ \Delta E_p = 0 \qquad (2)$$

That coincides exactly with laws of conservation because *any* process must keep same volume of energy in any isolated system. From the modern point of view only such processes are acceptable for examination in area of physics.

We can see following that way. From the one hand an object can use *any* trajectory in *gravitational field* between any two points located at the same distance from the body that produces the field. That relocation changes nothing in energy of the object and field itself.

From the other hand arises new question that was never applied before to motion in any type of conservative field including field of gravitation. Is *trajectory itself* necessary for moving object between two points equidistant from the body that produces gravitational field (conservative fled)? If *any* trajectory leads to same result (zero changes of energy) then relocation by any trajectory can be replaced by means of *no-trajectory relocation*. In that case unlimited number of all possible trajectories can be replaced by special type of relocation that contains only two points, the beginning point of trajectory and its end point.

[1] A. Zade, *Z-Theory And Its Applications*, (AuthorHouse 2011), USA, ISBN: 978-1452018935

To understand that relocation we can use notion of special type of trajectory (Z-Trajectory[2] in terms of Z-Theory) as image trajectory that connects two points in gravitational field equidistant from the central body and can be used by an object to reach the last point form the first point of that trajectory without common motion in gravitation field (*no-trajectory relocation*). That type of relocation has special reference. In teams of Z-Theory that is *Z-Transposition*.

According to figure A the object with mass m_2 takes consequently some locations on it circular trajectory mentioned as B, C, D, etc. If that object moves in gravitational field of the central body O and has *interaction* with that field then the object keeps circular trajectory as mentioned above. If the object uses no-trajectory (Z-Trajectory) (between points A and B for example) it needs to have interaction with gravitational field only at the first and the last points because interaction with gravitational field is not necessary for motion by *no-trajectory-relocation* (Z-Trajectory). That happens because any change of any type of energy of a moving object in case of absent interaction with a conservative field ever equals to zero. That exactly matches equations (2).

Hence motion by Z-Trajectory means at the same time absence of interaction between the object and a conservative field. That law is applicable for any type of conservative field because way of interaction between an object and each type of conservative field looks equally. For example magnitude of force of interaction between a charged electric particle and a body with electric charge can be expressed by well known equation.

$$F = \frac{q_1 \cdot q_2}{4 \cdot \pi \cdot \varepsilon_0 \cdot r^2} \quad (3)$$

Each force of interaction between *unit* mass or *unit* charge (m_2=1, q_2=1) and central body that has some mass or some charge can be expressed mathematically by same equation:

$$F = k \cdot \frac{1}{r^2} \quad (4)$$

Coefficient k has following meaning for gravitational (k_g) and electrical (k_e) fields:

$$k_g = G \cdot m_1; \quad k_e = \frac{q_1}{4 \cdot \pi \cdot \varepsilon_0} \quad (5)$$

Hence all sophisticated considerations mentioned above for a conservative field are applicable equally to gravitational and electric field. As a result notion of Z-Trajectory for an object becomes applicable completely for its motion in electrical field including absence of interaction between an object and electrical field in case of zero level of interaction between them.

Here appears unique condition of an object that holds Z-Trajectory. If a conservative field makes no interaction with a moving object when that object becomes undetectable by means of that type of conservative field. For example an object that has no interaction with gravitational field becomes undetectable by that field because it makes *no disturbance* in that field. Same consideration is applicable to any type of conservative field including waves based on same types of fields.

In case of zero interaction an object becomes undetectable for any type of gravitational observation as well as for any type of observation by electromagnet waves because each electromagnet wave contains a component of electric field[3].

Therefore same aspects of each conservative field (gravitational and electric one) lead to undetectable condition and location for an object that has *no interaction* with a conservative field. Same aspects give possibility for an object to *move* in each conservative field or their combination by Z-Trajectory. In that case an object keeps all laws of conservation and follows all principles of physics.

Physically full isolation can be produced by a conservative field. An object uses only possibility of full isolation that the field gives to it. Area of conservative field that separates field in its usual condition and some area in condition of full isolation is referred usually as Event-Shield (E-Shield in terms of Z-Theory)[4] because any event behind that shield is impossible for observation as well as for any type of interaction with it from the outside (from a conservative field).

Moving from the field in usual condition to the fully isolated area (crossing E-Shield) an object must do two steps. It must go from the field to isolated area to reach condition of full isolation then leave that condition to go completely out of that area. In Z-Theory that area has special name of Hidden Event Space (HE-Space)[5]. To go in and out of that space an object spends some time that is called Z-Transposition Time (ZT-Time) and is calculable by following way:

$$T_Z = \frac{2 \cdot L}{V} \quad (6)$$ [6]

In equation (6) the variable T_z is time of transposition, L is maximal length of moving object in direction of its motion, and V is its velocity. That is minimal possible time for relocation in HE-Space for an object.

It's time to look back to figure A. Suppose there is an object located not far from the Earth surface (at point M). In case of its motion with the planet around the Sun (located at point O) it reaches some point of new location (point Q) simultaneously with relocation of the planet from point A to point B. Period of time for such relocation can be calculated following way.

$$T_E = \frac{AB}{V} = \frac{S}{V} \quad (7)$$

In case of the Earth V is orbital velocity of the planet and S is the distance of its orbital relocation.

Suppose an object uses Z-Trajectory M-N-P-Q instead of trajectory in gravitational fields of the Sun and the Earth (M-Q). In that case the object needs only ZT-Time for that relocation (see equation F) because it needs not to go with the planet to reach point Q as the last point of relocation. As a result T_Z becomes significantly lesser than T_E. Difference between those periods of time depends from distance covered by the planet from moment of time then Z-Trajectory begins for a moving object to the moment of time then it ends for the same object (AB distance).

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[2] Source [1], page 36, [in-book reference 4.2.7]

[3] Source [1], page 41, [in-book reference 6.1.5]
[4] Source [1], page 62, [in-book reference 9.1.7]
[5] Source [1], page 63, [in-book reference 9.1.9]
[6] Source [1], page 84, [in-book reference 11.2.21]

All considerations mentioned above are theoretical approach to some unusual phenomena that was not ever analyzed before. To make sense in practical aspect of those considerations we need to make practical application for theory.

It's time to "field test" for Z-Theory. I use well known incident with Boeing 727. That aircraft was vanished for 10 minutes from the tracing radar screen during its descending to the airport of destination. After it reappearance and subsequent successful landing all onboard clocks and watches of the passengers were left for 10 minutes (time of aircraft absence).

Z-Theory gives elegant explanation for that event. Using parameters of the craft (overall length is 40.6 m) and its speed (270 m/s) we can calculate ZT-Time for the aircraft.

$$T_Z = \frac{2 \cdot 40.6}{270} = 0.3 \quad [s] \qquad (8)$$

[7]

As you can see ZT-Time appears as a very short period of time that is lesser than precision of onboard time measurement devices (1 second) and was mistaken as relocation with *true zero time*.

How it was possible physically? Z-Theory gives following answer on that question. All Earth-bound clocks were involved in motion with the planet around the Sun usual way. They count their inner recurrent processes[8] for period of time that coincides for time of motion for the planet in gravitational field of the star (the Sun). As a result all clocks measured same period of time (10 minutes in that case) as they do ever. We call those devices as a synchronously ticking clocks.

Like the Earth-bound clocks all onboard clocks and watches counted their inner recurrent processes as they *do ever*. That aspect of operation never changes for any clock. But unlike the Earth-bound clocks *all* onboard clocks and watches count their inner recurrent processes only for period of time that was necessary for Z-Transposition. Hence all onboard clocks traced duration of aircraft motion by different trajectory (Z-Trajectory) relatively to their *Earth-bound counterparts*.

After leaving Z-Trajectory the aircraft reappeared and met the planet again at the different point of space and time relatively to the frame of references bound to the star (the Sun) but at the same point of space relatively to the planet. Those are points M and Q in the picture A. As a result the aircraft reached different point of space and time relatively to the star and its gravitational field spending much lesser time than the planet that used its own trajectory in same gravitational field of the same star.

Hence same difference in readings between previously synchronized and well operating Earth-bound clocks and all onboard clocks of any aircraft can be used (after its landing) as inevitable prove for relocation of that aircraft by Z-Trajectory during a flight.

I hope further investigation of such phenomena around the globe bring much more evidences (statistics) for us and additional practical support for Z-Theory. As it known any evidence means nothing without a theory that uses observable facts as its consistent part and is able to make predictions and calculations.

[7] Source [1], page 107, [in-book reference 12.8.13]
[8] Source [1], page 104, [in-book reference 12.7.9]

References

[1] A. Zade, Z-Theory and Its Applications, (AuthorHouse 2011), USA, ISBN: 978-1452018935

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