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Considerations over the problem of the knowledge of the Universe

day/dialogue fifth

Precession of the planets on their orbits and its effect on their masses.

Here on Earth numberless generations fought for territorial conquest, fought to be able to possess " a piece of land large enough" from which to extract the means to survive but soon a problem cropped up in regard of the definition of a "land large enough" and of the definition of "enough" ?

Nothing is ever "enough" for the greedy human nature, and we can observe with what lust generation after generation, men fought to accumulate land, properties and treasures, and enslave other men in the bargain, forgetting that in life there are other purposes to pursue which generally could have as result a vast improvement of the life of the pursuer and of many other men.

Earth in its uniqueness offers to our spirit and to our imagination sceneries ever new and marvelous, clean infinite skies, sunsets, dawns , stunning sights every season of the Year, what will render us unable to appreciate these treasures are fighting, and blood losses, but how can we avoid them and also avoid cruel, deplorable and unforgivable actions performed while pursuing the acquisition of "lands large enough", whatever their values.

We stare at the natural phenomena and marvel, notwithstanding at times these "marvels", must be observed from safe distance.

I refer to the obnoxious effects due to fast large transformations of the m-e belonging to a physical mass, inducing a kinetic status into it that causes the disadvantages known to us as storms, hurricanes, volcanic eruptions, earthquakes, floods etc...

My peregrination is only done with the purpose to admire Earth and Nature and more I do not desire, I do not wish to become a potentate over the peaceful citizens of a beautiful land, since my eyes and ears grant me the unchallenged possession of the best the planet can offer and my memory causes it to be

permanent, what else can I wish?

Once accepted the fact that land is managed for the common good, I am very cautious when houses, roads and basic services must be built since they can become scars that obstruct the pristine natural. Certainly I am aware that farming is necessary to survival and infrastructures are needed to serve our growing civilization, to access and admire the natural beauties and the works of art which embellish Earth, for me as Engineer to respect the environment whilst contributing to the improvement of life on Earth is a valid pursuit.

After all my pleasure lays in the speculation over the nature of things and of the Entire Universe and if someone wishes to experience the same, must first put himself in my same state of mind since never happened that a pragmatic and blunted individual impervious to the beauties of the Nature, generally was able to obtain from it the fine favors to which I refer.

Until now the topic in discussion had been about static and dynamic forces and about cycles of movement and irreversible transformations produced by presence of gravity, now came the opportunity to introduce the "precession" since the basic concepts had been examined, agreement was reached to start talking about it .

Note: Static Force and Starter Force have been copiously mentioned up to now but I deem apt here to point that though they are physical entities of different origin quaintly they are represented by the same numerical value { for $a(r)$ and for dv/dt }.

The Static Force over a gravitational physical mass M is a contact mass Force caused by the radial flow of the ESF absorbed by the Large mass M_{LGM} and crossing the mass M , and in theory exists only if we assume that M and the contact surface are perfectly rigid. The physical justification of the Static Force is that the fabric of the ESF is crossing the mass M at velocity v_{ESF} .

$$F_{STATIC} = M v_{ESF} c^2 = M \frac{a(r)}{c} c^2 = Ma(r) \quad [kN]$$

$$\text{For:} \quad M a(r) = M \frac{kM_{LGM}}{4\pi r^2} = \frac{GMM_{LGM}}{r^2}$$

Which shows that the nature of F_{STATIC} expressed in kN, is contact and compression whilst the adhesive power of the ESF is deployed along the line of flow.

Note: the topic will be expanded in future.

The Starter Force is generated by internal gravitational transformation of neutron mass M_{RM} into M_{ESCE} and comes into existence under the thrust of the Static Force which by definition has no reason to exist once the mass M starts to move. The physical justification of the Starter Force is gravitational transformation-degradation as a reaction happening in presence of movement,

therefore F_{STARTER} is a mass Force nourished by gravitational release of the Spin belonging to the gravitational m-e, expressed by a value of transformation-degradation, and cannot exist on its own but is a component of the Dominant Force F_D :

$$F_D = F_{\text{STARTER}} v = M \frac{dv}{dt} v \quad [\text{kJ}]$$

The above formula for $v=0$ could be written $F_D = F_{\text{STATIC}}$ but then the physical meaning is totally different since the F_{STARTER} is result of a transformation of mass-energy that in energy equivalents is expressed in kJ and the physical meaning of the v in the formula above is that the F_{STARTER} is amplified v times.

I.: in the previous dialogues enough was said regarding circular orbits and about opposing Forces and the cycle of transformation “unbundling”, causing transformation of the gravitational-inertial neutron mass-energy M_{RM} inside the physical mass into inertial mass-energy M_{ESCM} , it become necessary now to introduce the precession phenomenon developed along the orbit run by a physical gravitational mass M around another physical gravitational mass (M_{LGM}) a lot larger.

As we know, the ESF is trapped by the physical mass of the Earth, and rotates with it, so that inside the Earth as a system the Static Force, is generated by the flow of ESF absorbed by its gravitational mass in a relative condition of absolute local quiet.

When movement is allowed and the static Force becomes the Starter Force acting along the radial direction, the transformation-degradation releasing spin and generating the Starter Force is amplified v times by the associated gravitational transformation inside the gravitational depression (becoming Dominant Force, F_D):

$$F_D = F_{\text{STARTER}} v$$

In orbit (assumed circular around a physical gravitational mass M_{LGM}), a satellite is a physical mass considered part of the system of the M_{LGM} and on it acts a Force that for the moment we call Static Force, it can be defined Static Force since in a circular orbit it changes direction but does not changes physical nature, and is generated from action due to the constant stationary radial flow of ESF through the physical mass in orbit, to it is opposed a Force of equal value in absolute generated by the constant inertial reaction of the physical mass to the variation of the direction of the spin associated to the m-e M_{ESCE} reflecting the presence of the constant equivalent kinetic energy (of whose existence the constant orbital velocity v_0 is physical proof).

Note: maintenance of the Static Force in the radial direction means that the equilibrium of the Forces happens in dynamic conditions forcing the spin of the m-e M_{ESCE} to change continuously direction.

The concept of Static Force is useful in the initial phase of learning since we make the hypothesis that we are in presence of a perfectly rigid physical mass, but once realized that a physical mass is endowed of elastic characters we cannot sustain the explanation that continuous presence of a Static Force is acting on it since in movement (direct movement or cyclical movement along the radial line the Static Force is superseded by presence of a Starter Force, which, as said, are both numerically equal in value but physically represent phenomena of different nature both generating Forces (the first Static and the second Dynamic) .

Note: a Starter Force acting over a physical mass resting over a large gravitational mass M_{LGM} (both masses considered elastic and therefore subjected to an unstoppable cycle, of relativistic nature and having the character of a vibration), is the result of a gravitational transformation-degradation always associated to a radial movement dr/sec that for $v_0 \ll c$ is:

$$\frac{dr}{sec} = \frac{v_0^2}{2c^2} \cong \frac{dc}{c} \cong \frac{c - \sqrt{c^2 - v_0^2}}{c} \text{ m/sec}$$

which as mentioned must be relativistic and of elastic nature.

Note: the dr is not a plain movement over a second of time but is the sum of internal vibrations of relativistic-elastic nature of unknown amplitude $2dp$ and period T_p whose sum over a second is $2dr/sec$ and dr/sec is called "striction in static conditions" (see [Ruggeri1](#)) whereas $dr'/sec = v_0 dr/sec$ is the "striction in orbital conditions".

Inside the gravitational field of the central mass of the system, this internal vibration along the radius determines in the first phase of the cycle (happening in favor of gravity) a value of transformation-degradation of M_{RM} into M_{ESCE} of elastic nature to which corresponds the equivalent Dominant Force.

$F_D = F_{STARTER} 2dr/sec$ is not exactly a Dominant Force since measures the "unbundling" or the amount of $m-e$ degraded that is continuously reabsorbed along the return phase of the elastic cycle and transformed into M_{ESCM} .

If the physical mass is in orbit at velocity v_0 around the M_{LGM} the Starter Force, acting on it, has the same formulation as the one above described, where the physical mass was at rest over a physical mass M_{LGM} but the striction $2dr$ in orbit is amplified v_0 times in respect of the similar radial cyclical vibration $2dr$ of elastic nature in static conditions, since the Starter Force moves this time at orbital velocity v_0 along the gravitational depression which is the one determining the transformation, the Dominant Force (or the value of unbundling) in orbit becomes now:

$F_{D0} = F_{START} v_0 2dr/sec = F_{START} 2dr'/sec$ with $2dr'/sec = v_0 2dr/sec$ and is opposed by the inertial reaction of the mass and by presence of the elastic fabric of the ESF which acts as a virtual surface of elastic character.

In both cases the Dominant Forces are unstoppable since the elastic vibrations

to which they are subjected inside the gravitational field are (as mentioned for the Borehole) due to the necessary presence of the Static Force, self starting and of relativistic nature.

In both cases the equilibrium of Forces is dynamic in the context of an elastic vibration of unknown frequency and amplitude of which we can calculate the associated value per sec as “striction”, happening inside the gravitational field and therefore subjecting the physical mass under observation to the related and equivalent unbundling of the m-e M_{RM} into M_{ESCM} which is accumulated inside it on a continuous constant basis along the successive cyclical periodic vibrations.

In orbit, the presence of radial vibration, of amplitude $2dr'$ is not only cause of unbundling but of two associated phenomena:

a) an advancement of geometric nature, respect to Newton’s Law, describing the orbit of magnitude $2 \pi dr' m/sec$ and

b) a relativistic time advance $\Delta t_P/sec = (2 \pi dr'/sec)/v_0 \cong 2\pi dc/c \text{ sec/sec}$ of a clock synchronized to the Newton time of the system having the M_{LGM} in the center and sent inside the object in orbit, (see [Ruggeri19](#)).

Whereas for both a) and b) the time phenomenon is measured in respect of the local absolute Newton’s time related to the central M_{LGM} of the system. (see [Ruggeri10](#))

A possible justification can envisage the physical mass in orbit as if it were running the orbital pathway of an extra length per unit of time through the added movement caused by virtual presence of wheels of radius dr' turning at the speed of $2\pi \text{ rad/sec}$. whilst carrying a clock synchronized to the local absolute Newton time of the central M_{LGM} and sent in the physical mass in orbit through a vector, (a rocket), this clock, in virtue of the gravitational vibration will produce a temporal relativistic advance of the time measurement of :

$$\Delta t_P/sec = (2 \pi dr')/v_0 \text{ sec/sec} = 2\pi dc/c \text{ sec/sec}$$

Note: in orbit the physical mass is also subjected to time retardation still in respect of the absolute local Newton’s time, (a measurement of time related to the central M_{LGM} through $k=4 \pi G$ the universal phenomenon of absorption of ESF) caused by presence of inertial m-e due to the presence of orbital velocity v_0 , and whose value is:

$$\Delta t_0/sec = - dc/c \text{ sec/sec}$$

These values of relativistic time advance and time retardation in orbit are admirably exploited in the Global Positioning System (GPS).

See [Ruggeri19](#) where they are related to the GPS and duly calculated.

Note: The internal transformations-degradations of gravitational nature associated to the precessional events mentioned above, which (as said) produce unbundling of M_{RM} into M_{ESCM} changes the composition of the mass-energy

$M_0 = M_{RM} + M_{ESCM}$ but does not change the overall characters gravitational and inertial of the physical mass in orbit since M_0 is neutronic mass and remains gravitational and inertial.

The Starter Force and its opposite (which is due to an interaction produced by inertia of the physical mass joined by the materialization of the fabric of the ESF acts over a mass endowed of elastic characters and a ESF behaving like a virtual elastic pathway.

This elastic pathway behaves in a in a similar manner to a real pathway over which a virtual drive wheel belonging to the physical mass of radius dr' (which in this theory is referred as "striction") turns a full circle over a time interval of a second.

We do not know the exact value of the amplitude of the internal vibration, and we do not know the value of frequency but we assume that the "striction is half of the sum of the amplitudes of vibration over the time interval of one second".

We assume that, in orbit, the internal transformation-degradation afflicting the physical mass proceeds from the Dominant Force $F_D = F_{STARTER} 2dr'/sec$ related to the orbital striction dr' which since is cyclical is giving a transformation-degradation at first from neutronic m-e M_{RM} into M_{ESCE} , transformed and accumulated into elastic M_{ESLA} , due to presence of joint inertial reaction of the mass in orbit associated with the reaction of the elastic ESF and when the physical mass has exhausted its capacity to absorb M_{ESCE} as M_{ESLA} the compressed spin of the M_{ESLA} forces the physical mass to run against gravity so that the m-e M_{ESLA} after inversion of spin has occurred is retransformed into M_{ESCE} associated to this movement which is reabsorbed inside the physical mass becoming M_{ESCM} at the end of a cycle of vibration.

Results then that, after serious evaluation of the phenomenon, to the orbital velocity v_0 (obtained through Newton's formula) must be added an extra velocity v' causing the "geometric precession" and the new expression of orbital velocity taking into account the precession is (for $v_0 \ll c$):

$$v_{0P} = v_0 + v' = v_0 + 2\pi dr' / sec$$

$$\text{With : } dr' / sec = v_0 dr / sec = v_0 \frac{dc}{c} \cong v_0 \frac{v_0^2}{2c^2} \text{ m/sec}$$

and since v' is constant and can be added to v_0 , all the planets of any solar system in which prevails a configuration similar to ours and in the context of non excessive eccentricities, have a precession that can be calculated with a general Universal formula.

As abovementioned the v' depends from the value of the cyclical vibration $2dp'_v$ having frequency v unknown, but corresponding to a total movement per second $v2dp'_v = 2dr'$ in which dr' is the sum of half of the cyclical vibrations dp'_v accumulated over a second and has been called "orbital striction".

In future through the specific formulations I intend to show how and why, happens that a value dr/sec of "striction in static conditions" can be defined for an

object at rest over a large gravitational mass.

In conclusion, the orbiting mass does not vary, or if it does, it varies by a modest quantity, since in the conditions a) and b) above, the transformation from M_{RM} to M_{ESCM} can be associated with degradation of the M_{RM} into an extremely small amount of Heat coming out in dissipation.

Since, in our solar system, the objects have been in orbit for billions of years, these internal transformations in some cases could represent a valuable accumulation of M_{ESCM} , which fact inside the object in orbit could materialize in abundant presence of heavier atoms, those in which it is possible through atomic fission to transform-degrade M_{ESCM} into M_{Heat} .

Within our solar system results that the terrestrial planets, Mercury, Venus and Earth (especially Mercury) could possess a sizable amount of M_{ESCM} , accumulated during the course of billions of Years.

When afterwards I went to measure the same effect for the Galilean moons IO and Europa that are in orbit around the planet Jupiter, my calculations predicted that the amount of transformation-degradation, per unit of mass, that happens inside IO is 86% of the one that takes place inside Mercury and Europa scores only 16.9 %.

The spacecraft Voyager that raced past IO not long time ago to the surprise of all in the world of Science sent back proof that IO is endowed of volcanic activity and its volcanoes have up to a thousand times more power than those on Earth, IO is the object mass volcanically more active in our Solar system (if one makes exception for the Sun) in which no one expected to find volcanoes.

I can say that in principle my theory justifies the emission of some of this Heat and dissipation produced during unbundling due to orbital striction, but I came to the conclusion that this dissipation must be extremely low and the internal transformations-degradations caused by the unbundling in orbit, in general, remain locked inside the physical mass of the planets.

Therefore can be safely assumed that in IO the internal production of M_{Heat} coming out as dissipation can only be the result of tidal action inside its mass causing internal frictions, since IO is orbiting Jupiter at far higher gravity pull (18 times) than the pull which Mercury is having from the Sun.

What cannot be overlooked is the effect of the striction dr/sec in the static case since the gravitational compression inside the physical mass affects the atomic surfaces forcing them to release m-e M_{Heat} but this phenomenon is only appreciable in physical masses far larger than IO (see [Ruggeri14](#)).

For example, I was able to attribute, to the gravitational transformation-degradation associated to striction in the static case, the fact that Earth's center is still hot when should have cooled long time ago, (see [Ruggeri14](#)) and I suggested that the large gaseous planets (principally Jupiter) show internal presence of M_{Heat} coming out as dissipation due to phenomenon attributable to the gravity of these physical masses. In a more evident way when the gravitational masses are very large, we have that the phenomenon is making stars of them, as it is the case with the Sun.

P : you tell me that Mercury could become the source of fissile mass in future ,

ready to become a centre of mining activity that will be facilitated by low temperature during its night and by low value of gravity on its surface. In it, the mining activity could eventually become completely automatic, to avoid the possibility of losing precious human lives.

This answer took me by surprise since clearly revealed acceptance of my theory, P was the first person who got convinced, this had to be also because his way of thinking brought him to visualize the fantastic possibility that the human race could not manage to exhaust a similar reservoir of mass-energy, even over a period of millions of years .

Perhaps he felt that he had incautiously accepted this hypothesis without a thorough criticism, but not long after , when I presented to him the formulation that based over the same arguments gave the amount of m-e produced inside the Sun and the related explanations , he was completely convinced (see [Ruggeri14](#))

P : what about IO ? will it be possible to find wealth of fissile mass also in it ?

I : certainly but in different conditions from those prevailing in Mercury, and it is very likely that IO could be a deadly trap for anyone, given the fact that its volcanoes extrude millions of Ton of sulfuric dust each time they become active and indeed they are very active, and since there is little atmosphere the fall out is finely diffused over its surface, which must have a very thick layer of it.

No one knows how the sulfuric dust stays at the surface of IO, whereas Mercury has a solid surface which could permit landing of a man made device.

P : these transformations, due to orbital striction, unbundling mass-energy M_{RM} into M_{ESCM} , become interesting only in particular conditions of orbital movement close enough to the central physical gravitational mass M_{LGM} in which we always have good values of gravitational pull associated with a good enrichment of M_{ESCM} in the gravitational masses in orbit, what then is the effect of the static striction inside a planetary mass associated to the strong internal compressions of the atoms caused by its own gravity ?

I said : “dear friend , (without noticing it I used this familiar expression for the first time since we started our conversations, since being very pleased with the question I forgot the formal relation that up to now had been respected) only now I realize that my presentation was clear since the question was really well formulated by you”.

And then I continued: Opposite Forces are always present, and this applies if the objects are in orbit or resting over the surface of a large gravitational mass, a concept which can be extended to a portion of physical mass inside the same large gravitational mass M_{LGM} , inside which, if we consider an internal ideal spherical surface, all the mass above it is supported below, therefore having the mass elastic character with the meaning above described (allowing vibration fostered by an unstoppable phenomenon of temporal relativistic nature),

everywhere we move inside the mass, we are in presence of phenomena of elastic character that can be described through the cycle or vibration under the effect of gravity, which vibration in this case is variable function, dependent from the radius, and the density.

The huge compressions internal to a Large gravitational mass M_{LGM} , caused by its own gravity is affecting the surfaces of the atoms which being made up of a thin film of ESF cannot retain the product of the internal transformation, the “unbundling” of the gravitational neutron m-e inside the atoms, therefore with the increase of the total value of the M_{LGM} an increasing amount of M_{ESCM} is directly transformed into M_{Heat} and expelled from inside the atoms but accumulated inside the physical mass, in the interstices between the external surfaces of the atoms, from which eventually comes out as dissipation.

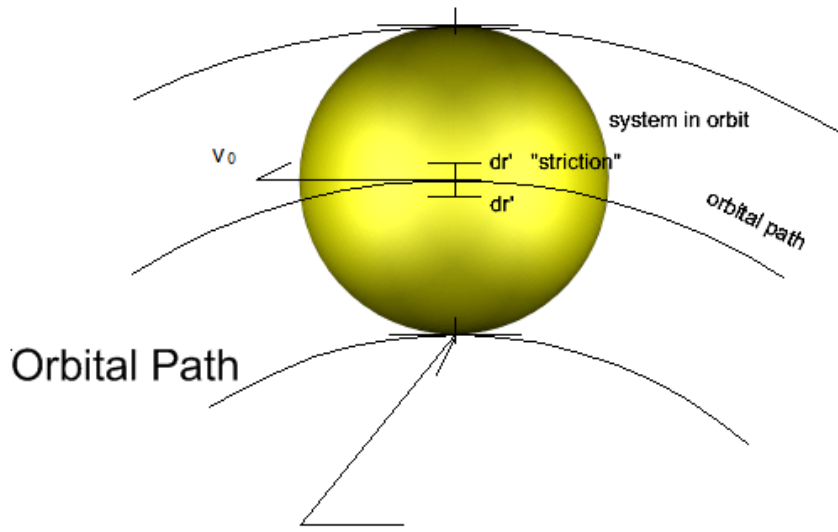
This process in masses like Earth is fairly advanced but is difficult to determine how close is to expel all the M_{ESCM} produced, but in the masses of the stars we can say that the internal production of M_{ESCM} is totally expelled as M_{Heat} that comes out as dissipation.

Note: in [Ruggeri14](#) I have assumed always that all the internal production of M_{ESCM} is not retained and is directly transformed into M_{Heat} and comes out as dissipation.

You will have to excuse me now, since I am really tired, I said to P. “come again, you can come even tomorrow and I promise that we will carry on and next time the topics will be really interesting”.

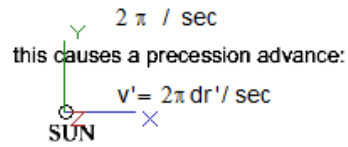
This, then, was the abrupt end of the fifth dialogue.

Striction and Precession



Note: the physical mass M finds a pathway for an ideal wheel of radius dr' moving at angular velocity

Drawing not to Scale



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