

By logic we prove, by common sense we proceed, by intuition we invent, by art we produce by tenacity we achieve.



Antonio Ruggeri Dr. Ing.  
[modexp@iafrica.com](mailto:modexp@iafrica.com)

13 August 2009

## Considerations over the problem of the Knowledge of the Universe

Day/dialogue eleventh

Representation of the Universal reality in space and in time, based on the study of phenomena of mass-energy exchanges between physical masses and the ESF, internal gravitational transformations-degradations of the physical masses, and more... , in accordance with phenomena observed that are consistent with the open cycle of the transformations-degradations of mass-energy along which the dynamism of the universal reality develops.

As during the continuous invariable passage of time on Earth, the human vicissitudes evolve, in the same manner slowly after having overcome the initial surprise, ideas started to form in P's mind and piled up producing a renewal of interest which, in this last dialogue, I tried to satisfy as best as I could.

P : your presentation of Lorentz transformations is an attempt to advance which only considers absolute velocities  $0 < v \ll c$  of the masses (or systems concentrated in a mathematical point), directed towards the Observer or away from him, and then the object mass  $M$  (which can be a system) that moves at these limited velocities  $v$ , dissipates at reduced  $c-v$  absolute speeds so that the combined speed of the signal and of the velocity of the mass amounts to the limit  $c$ .

You have then discussed what happens inside a system in movement having a large gravitational physical mass  $M_{LGM}$  in its center but entraining ESF within a permanent field around it and what happens to the signals coming out of it when

it moves in the condition proposed by Lorentz, which is towards the Observer in quiet or in the direction opposite to him, but then what does happen (how is the observer affected) if the masses that are sending signals (as dissipation) are directed towards another direction, whatever that may be ?

I can say that I was expecting this question; in effect all along I did mention the graphic called DELINEATIO MIRABILIS (DM) see [Ruggeri7](#), without adding detailed explanations, though I had in mind to present and explain its functions, therefore I now answered in the following manner:

Note: in actual terms the idea that we could measure the transverse movement  $v_T$  of a very distant object is appealing, but practically in most cases difficult to achieve, the reason being that to measure in the celestial map movements of stellar objects or of systems made of clusters of them or movements of entire galaxies (given the enormous distances and the fact that they move at modest values of  $v_T$ , takes hundreds of years or millennia, nevertheless the DM as presented does not excludes this possibility.

I: From the intuitive point of view, in the extant Lorentz's graphic, one can deduct the banal condition that an observation can proceed from a system O (where the observer resides), close to the condition of absolute quiet and receives a signal from another system S also close to the condition of quiet.

We can assume that m-e  $M_{Heat}$  released by S as dissipation is substance coming out free from the atoms of the physical mass M (carrying with it the memory of its permanence inside them), this  $M_{Heat}$ , although freed remained trapped inside it in the interstices between the external surfaces of the atoms, and had its spin adhering externally to them (compressed almost entirely inside the physical mass M) .

This m-e  $M_{Heat}$  is coming out the physical mass M absorbed by the ESF as dissipation at c speed, losing the compression c of the spin which is reduced c times, and whilst absorbed is subjected to dilution of its density value in inverse proportion to the square of the radial distance r from the origin (both inside the sphere-shaped physical mass M and in the ESF where is dissipating).

Then, when at a distance  $\rho = ct$  we assume that this stationary object S, far enough from the point of observation to be assimilated to a point, produces a flash of light (m-e as dissipation), the eye of the observer at  $\rho$  distance receives the signal duly reduced in density of presence of m-e per unit of volume, after a time t has elapsed, and the m-e that the observer receives as dissipation, in the present at  $t = 0$ , is the one that came out from S as a flash of light a time t earlier and has reached the observer traveling at c speed.

The release of  $M_{Heat}$  is the last step of the journey undergone by the m-e since as ESF entered the physical gravitational mass M, but inside the said physical mass, as already discussed, we can have presence of m-e in a status called inertial ( $\Delta M_{ESCE}$  as cause of movement), a presence justified through internal transformation-degradation caused by gravity of the m-e  $M_{RM}$ , or through absorption from external source.

The presence of inertial  $M_{ESCE}$  is part of two realities, (it belongs to the physical

gravitational mass since half of its spin is not degraded and adheres to the physical mass whilst the balance of the spin has inverted its direction of action into a direction fixed by the character of the gravitational transformation-degradation or by acquisition through insertion by external source, and in that status has acquired the capacity of being absorbed by the ESF), in other words the spin of this  $\Delta M_{ESCE}$  is only half disconnected from the physical mass whilst the other half is unidirectionally released and in developing the faculty to be absorbed by the ESF carries with it the physical mass  $M$  to which it is attached:

$$\text{Only for } 0 < v \ll c \text{ will be: } \frac{1}{2} M v^2 \cong \Delta M_{ESCE} c^2$$

In the change of direction of the half spin we have to envision that is involved a  $\Delta M = 0.5 \Delta M_{ESCE} + 0.5 \Delta M_{RM}$  (whereas  $\Delta M$  can be a single particle SP) and a directional change of the density of the whole system which includes the coming into existence of a whole field of ESF resulting alloyed to it, and that change of density must be considered the cause of absorption by the ESF surrounding the system and therefore of generation of the velocity  $v$  of the system containing the physical mass.

This will be made understandable when considering that similarly a gravitational depression of the ESF all around the physical mass does not produce emergence of velocity but is only cause of difference of density between the ESF belonging to the system and the surrounding ESF having a value twice as large as the one caused by the inertial  $\Delta M_{ESCE}$  and causing double time retardation in similar equivalent terms to the one just considered (in presence of a  $\Delta M_{ESCE}$  but this case is now in conditions of immobility absolute or virtual).

Note: this last physical character is subjected to the law of summation of physical effects of the same type.

Substantially this m-e  $\Delta M_{ESCE}$  is made of Speeding Particles (SP) that being still bound to the physical mass  $M$  can only move (by necessity) in association with it and the external ESF can react to presence of inertial mass-energy  $\Delta M_{ESCE}$  since the directional character causes an imbalance of densities in the system forcing it to slide (being absorbed in the direction of the spin) almost effortless inside the ESF.

This status justifies the difference of behavior that there is when the m-e  $\Delta M_{Heat}$  is involved, since it results separated from the physical mass as a status of existence of substance whose compression of the spin character can be reduced in contact with the ESF to the extreme physical natural limit ( $c$  times) so that acquires extreme velocity  $c$  of dissipation in all the radial directions, whilst its density reduces with the expansion of presence in the ESF.

The orbital velocity  $v_0$  inside a gravitational system, maintained by a physical gravitational mass  $M$ , justifies the phenomenon to our direct enquiry, in the following terms:

$$\text{for } 0 < v \ll c \text{ will be: } \frac{1}{2} M v(r)_0^2 = \Delta M_{0ESCE} c^2$$

Here as well, in a condition generated by gravity, the  $\Delta M_{0ESCE}$  in the above formulation hides the physical fact that an amount  $\Delta M = 0.5 \cdot \Delta M_{0ESCE} + 0.5 \cdot \Delta M_{RM}$  is involved in the phenomenon since half of each speeding particle of which it is formed maintains its character of m-e  $M_{RM}$  and adheres to the gravitational mass of the system  $M$  in orbit, and the spin character released by the other half is, by interaction between gravity and opposing inertial reaction, by necessity, forced to adjust its direction of movement (adhesion to the ESF).

The property that the SP particle has to split in two its capacity of adhesion is justifying a dual nature of the spin of the SP which is fully released when the substance freed from the gravitational mass comes out of it moving at  $c$  speed:

$$\Delta M = \Delta M_{Heat} \text{ Ton/sec}$$

$$\text{Or in equivalent terms : } \Delta M c^2 = \Delta M_{Heat} c^2 \text{ kJ/sec}$$

A question arises now in regard of the value of internal compression that the  $M_{Heat}$  released inside the physical gravitational mass is capable to build up since  $c$  is a physical limit (an interaction), its value must definitely be associated to density of presence of substance m-e (in this case,  $M_{Heat}$  inside an unit of volume).

In actual fact in extremely large gravitational masses, happens that values of internal compression built up by gravity, and acting on the atomic surfaces reduce their individual characters permitting that fast internal transformation of  $M_{RM}$  bypasses the gravitational transformation into  $M_{ESCM}$  and the atoms directly release  $M_{Heat}$  (which is the next step of transformation).

If this release happens too fast due to what has been called “gravitational collapse”, (generally causing fast internal atomic transformation) the internal density of presence of  $M_{Heat}$  can also dramatically increase until a point is reached in which the dense (compressed substance)  $M_{Heat}$ , suddenly finds its way outside the physical mass  $M_{LGM}$  and generates what we observe as an explosion.

The mechanism of explosion of a physical mass  $M$ , is for me at the moment only source of conjecture based on empirical observation of analogous phenomena, but must be noticed that any type of phenomenon falling under that definition, should be associated to values of internal compression of the  $M_{Heat}$  (total compression of spin and compression of substance inside the unit of volume) whose limit is only a matter of guess, building up until the mass affected produces a sudden release of  $M_{Heat}$  associated to expulsion of fragments of physical mass belonging to it.

What one can say is that explosions, at universal level, generally need to overcome in very short time intervals the gravitational pull holding together the physical mass inside which they originate, and transmit to chunks of the exploding physical mass notable amounts of inertial m-e  $\Delta M_{ESCE}$ .

Though the phenomenon defies direct measurement, the observation is that, in a mass in orbit the phenomenon causing the dominant gravitational mass Force is opposed by the inertial mass Force which is a contact mass Force generated by change of direction of the velocity  $v_0$  of the physical mass moving along an orbit more or less circular (see [dialogue 10](#)).

The physical mass in orbit (for  $r=\text{const}$ ) contains the following constant amount of inertial m-e equivalent to energy of movement:

$$M \frac{v(r)_0^2}{2c^2} = \Delta M_{0ESCE}$$

Whereas the build up of a velocity of fall  $v(r)_{FALL}$  supposedly from infinite distance along the radial direction corresponds to the total m-e  $\Delta M_{ESCE}$  necessary to escape from the gravitational field of the central mass of the system, we have that (for  $R < r < \infty$  and  $v(r)_{FALL} \ll c$ ):

$$v(r)_{FALL} = \sqrt{2} v(r)_0 \quad \text{and} \quad M \frac{v(r)_{FALL}^2}{2c^2} = M \frac{v(r)_0^2}{c^2} = 2\Delta M_{0ESCE}$$

Note: in [dialogue 10](#) page 12 is also noticed that the two opposing Forces in orbit are not exactly the same as it was assumed in CM.

The orbital relation is justified through the equivalent paradigm in which a centrifugal Dominant mass Force developed by circular velocity  $v_0$  and acting over a physical mass  $M$  is stopped by an opposite contact (Static Force) generated through a link (a rope or a chain or molecular adhesion if the object is a flywheel) to the center of the circle.

It results then that the m-e necessary  $\Delta M_{0ESCE}$  to maintain a gravitational mass into a circular orbit of  $r > R$  around a mass  $M_{LGM}$  of maximum radius  $R$ , is half of what it is needed to transform into  $\Delta M_{ESCM}$  in order to escape at  $r$  distance from the gravitational field.

Note: when an object is sent into an orbital path of radius  $r$  to the value  $\Delta M_{0ESCE}$  must be added the m-e supplied to the physical mass  $M$  as  $\Delta M_{ESCE}$  and transformed into  $\Delta M_{ESCM}$  whilst it moves against the gravity from the surface of Earth ( $R$  radius) to the orbital path of radius  $r$  (this transformation only adds to the physical mass  $M$  gravitational-inertial m-e  $M_{ESCM}$  and is not affecting the temporal phenomena as the variation of inertial m-e  $M_{ESCE}$  does).

Note: the meaning of presence in our solar system of objects in near circular orbit disposed close to the plan of the ecliptic, is that the solar system must be very old since surrounded by planets whose kinetic energies (presence of inertial m-e endowed of spin) are at a minimum level.

Note: in absence of gravity, the application to a physical mass of a Dominant Force  $f(t)_D = \text{const} \cdot t$ , linear function of time, (a condition that respects in terms of equivalence Newton's Law "F=Ma" for  $v \ll c$ ), produces the Total Force  $F(t)_{TOT}$  also function of t in the same terms of Newton's Law:

$$\int_0^t dF(t)_{TOT} = \int_0^t d\left(M \frac{v(t)^2}{2}\right) \cong M \int_0^t v(t) \frac{dv(t)}{dt} dt = \int_0^t M \cdot a(t) v(t) dt$$

Whereas for  $a(t) = dv(t)/dt$

Corresponding to :  $f(t)_D = M a(t) v(t)$  only if  $a(t) = \text{const}_1$  like it is for the gravity,

Gives a constant starter Force  $F = M a = M \text{const}_1$

and  $v(t) = a t$  (linear function)

1) and  $f(t)_D = M a v = M a^2 t = F v$  (linear function of t)

and  $F(t)_{TOT} = \frac{1}{2} M a^2 t^2 = \frac{1}{2} M v^2$

Note:  $a = \text{const}_1$  along the radial direction is constant only locally, whereas in a circular orbital path the Starter Force  $F = M dv/dt$  as a constant value of transformation-degradation is impeded and reduced to a factor of release determined by a cyclical radial movement (a vibration whose sum is  $2dr/\text{sec}$ ) of elastic nature whereas  $dr$  is called orbital striction, the only possible explanation is that the value of Starter Force acting over the mass  $M$  in orbit, is opposed by the inertial reaction of the physical mass  $M$  to change of direction of movement complemented with the added effect due to presence of elastic character of the physical mass  $M$  pressing against the fabric of the ESF and that this last effect is radial and comes into existence under the intense solicitation provided by the gravitational mass Starter Force over the physical mass  $M$  moving at  $v_0$  along the orbital path.

Note: formulations regarding this topic have been presented in [Ruggeri6](#) page 2, see also the [Appendix](#) to this dialogue.

How the physical mass  $M$  can be brought close to  $c$  speed, (which for it represents an unreachable limit).

All the observations of objects in movement made in Galilean non relativistic fashion permitted the development of Classic Mechanics (CM), nevertheless the introduction of the Law of equivalence led to a reevaluation of this Science and in many cases the observer had to move from CM towards the more accurate representation offered by Relativistic mechanics.

In this event, whilst the observer makes available inside the physical mass  $M$  increments of inertial  $m$ -e  $\Delta M_{ESCE}$  in the unit of time, whose presence

corresponds to an equivalent Dominant Force:

$$F_D = (\Delta M_{ESCE} c^2)/\text{sec} = M(dv(t)/dt)v(t) = F(t)_{\text{starter}} v(t) \quad \text{kJ/sec}$$

He will be causing acceleration of the velocity  $v(t)$  of the physical mass  $M$ , and due to the fact that the presence of ESF limits the value of velocity of  $M$  to a maximum  $c$ , he will be faced by a gradual increase of transformation inside the physical mass  $M$  of the inertial m-e  $M_{ESCE}$  supplied, into inertial m-e  $M_{ESLA}$  that then accumulates into  $M$ .

Assuming that through supply of an increasing  $F_D$ , the physical mass  $M$  reaches a velocity  $v \sim c$ , the observer will find that to increasing movement of  $M$ , the ESF will oppose a fabric character creating an insurmountable physical barrier and increasingly forcing the  $\Delta M_{ESCE}/\text{sec}$  inserted as equivalent  $F_D$  to be absorbed as m-e  $\Delta M_{ESLA}$  of purely inertial character going to increase the ratio  $(M_0 + \Delta M_{ESCE} + \Delta M_{ESLA})/M_0$  (the outcome will be that if he keeps increasing  $F_D$ , when the mass  $M$  is nearing  $c$  speed, it will be subjected to a gradually undefined increase of the component  $M_{ESLA}$ , whilst the increase of velocity tends asymptotically to zero and the external observer in conditions of quiet will be in a situation whereas the time phenomenon inside the  $M$  observed (due to the inordinate internal increase of inertial m-e) tends asymptotically to retardation,  $t_R/t \rightarrow 0$  for  $v \sim c$ ).

Note: the extreme conditions causing the physical mass to achieve speeds close to  $c$  (supply of increasingly large amounts of inertial m-e  $M_{ESCE}$ ) at present status of the art, can only be generated by insertion of asymptotically increasing values of Dominant Force, and this application of  $F_D$  presently can only be obtained through the application of suitably variable electro-magnetic fields to physical masses endowed of electric charges (acceleration of particles).

We have that in a system  $S'$  in movement, the retardation developed by a physical phenomenon (described through the retardation of temporal measurements) is justified both by presence of  $\Delta M_{ESCE}$  and  $\Delta M_{ESLA}$  introduced through a Dominant Force of increasing value, in order to maintain speeds of  $v \sim c$ , since at that speed the ESF has lost since long its capacity of absorption over a system and offers a value of resistance constituted by an increasingly insurmountable drag.

Focus on relativistic conditions at  $0 \sim v \ll c$  .....

If we observe in conditions of quiet a signal coming from an object (concentrated on a point)  $S'$ , endowed of velocity  $v$  directed towards us, since the speed of light is constant in any system, we in the point (System  $O$ ) in quiet, receive it at  $c$  speed, therefore that signal for us is coming from the past at temporal distance  $t$ , but in that time  $t$  the object  $S'$  has moved and now is at a distance of simultaneity from us:

$$\rho' = (c-v) t = ct_S$$

( where  $t_S$  is the time of transmission at  $c$  speed from  $S'$ ), we have as well that the internal phenomena of transformation-degradation in  $S'$  are in retard in respect of the way they are running in  $O$  and follow the law of relativistic retardation as described by Einstein for the SR.

The distance  $\rho'$  present in the Lorentz graphic (now that  $S'$  is moving towards us ) is cause of great confusion which can be overcome if we consider that the light signal is propagating inside a system  $SO$  in quiet and external to  $S'$  and in it  $S'$  also moves at  $v$  speed, causing that the distance  $\rho = ct = vt + (c-v) t$  can only be run at  $c-v$  speed by a signal coming out of  $S'$ , (see graphic in [dialogue 9 Fig 1](#)):

$$\rho' = (c-v) t$$

Since now inside  $S'$  all the physical transformations which are modeled by the time are retarding, we have that for small values of  $v$ , ( $0 < v \ll c$ ) if we dispose of two synchronized identical clocks and send one of them in  $S'$  (from the system  $O$  in quiet) when in  $O$  we measure an interval  $t$  of time, in  $S'$  the second clock will measure a time  $t_R$ , (whereas for  $0 < v \ll c$ ):

$$\frac{t_R}{t} = \frac{c'}{c} = \frac{k'}{k} \rightarrow 1$$

we then can say that when  $v \ll c$  and these values are close enough to 1 the following ratios must then be satisfied:

$$\frac{t_R}{t} = \frac{c'}{c} = \frac{\sqrt{c^2 - v^2}}{c} \cong 1 - \frac{v^2}{2c^2}$$

$$\frac{t_R}{t} = \frac{k'}{k} = \frac{M_0}{M_0 + \Delta M_{ESCE}} = \frac{1}{1 + \frac{v^2}{2c^2}} \cong 1 - \frac{v^2}{2c^2}$$

Whereas the  $v \ll c$  can independently be either the absolute  $v$  of SR or the local absolute  $v_0$  of GR.

Note: in fig 1, the distance expressed in universal time run at universal velocity  $c$  of the light  $\rho' = ct_S$  in the system  $OS$  is also called “distance of simultaneity” since the signal emitted at a distance  $\rho'$  where the object has moved after a

time interval  $t$  has elapsed takes  $t_s$  sec to reach  $O$  at  $c$  speed (in Astronomic terms the system  $S'$  is distant a time  $t_s$  which usually is not expressed in seconds but in "light year" units).

When we consider the system  $S'$ , for the internal observer, the speed of light (which is a local physical phenomenon) is  $c$ , the constant of absorption is  $k$  and the time which models them is  $t = 1$  sec (the Newtonian time is modeled over the constant  $k$  or its correspondent  $c$  both expressing the physical phenomenon of absorption), since he is in conditions of virtual quiet due to the fact that the presence of the inertial mass ( $\Delta M_{ESCE}$ ) not only is associated to velocity  $v$  of the system but is cause of entrapment of ESF, which then (in alloy with the  $\Delta M_{ESCE}$ ) is moving together with the system ( $S'$ ) causing it to acquire internally a status of relative quiet.

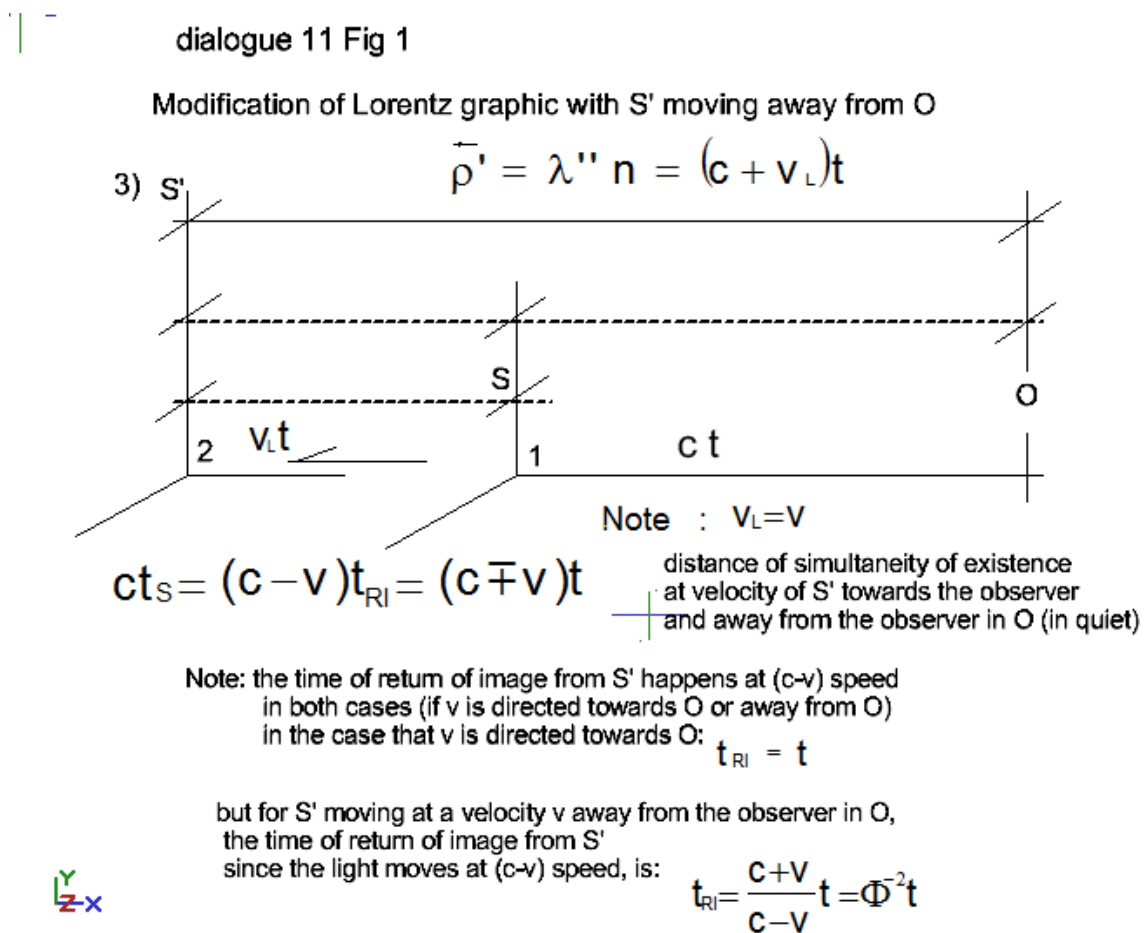


Figure 1

In these terms dissipation comes out of  $S'$  in movement at the maximum speed  $c - v$  and since  $S'$  moves at  $v$ , we have a total  $c$  which is the maximum allowed, and this applies whatever the direction of  $v$ , as outlined in the graphic DELINEATIO MIRABILIS, (see [Ruggeri7](#)).

Note: This concept permits the introduction of a time of return of image as it was

presented already in fig 1 of [dialogue 10](#).

Since the signal consisting of dissipation at  $(c-v)$  is a feature independent from the direction of  $v$ , the original Lorentz's graphic can be extended to a system  $S'$  originally at a distance  $\rho = ct$  but able to move in all the possible directions.

This extends the possibilities of representation of the universal reality, within the relativistic values of  $0 < v < c$  to a two dimensional plan as shown in the DELINEATIO MIRABILIS (DM).

Note: in the graphic DM the range of value of  $v$  has been extended to an ideal circle for  $v=c$  but physically in most of the natural cases this is an improbable circumstance (for the reason already mentioned that to achieve those speeds it is necessary to accelerate a mass-energy electrically charged with Forces imposed externally with the help of electromagnetic fields (which represent conditions not compatible with the Lorentz's graphics and with the DM since in them  $S'$  is a physical mass considered constant endowed of movement and large enough to be emitting light signals).

We must appreciate now that if the two dimensional plan of the DELINEATIO MIRABILIS (DM), must contain  $S$ ,  $O$  and  $S'$  (in order to contain the direction of  $v$ ) and if the plan  $SOS'$  is turned around the axis  $SO$  we end up realizing that we can cover the set of all the possible points surrounding  $S$ .

Nevertheless the maximum physical distance  $S'$  from  $S$  is  $\rho = ct$ , (see DM [Ruggeri7](#)) constituting a limit spherical surface of radius  $\rho=ct$  and representing the maximum physical limit of existence of dissipation from a point  $S$  after an absolute time interval  $t$ , but here we are not dealing only with dissipation from  $S$ , since is  $S'$  that moves at velocity  $0 < v_L < c$ , and is the dissipation coming out of it at  $c-v_L$  that reaches the limit sphere of radius  $\rho=ct$  after an interval  $t$  of time has elapsed.

To get the  $t_s$  permitting representation of the simultaneity of existence the DM requires interpretation of the phenomena of transmission measured through the Doppler effect and this was mentioned in [dialogue 9](#).

Note: all along, in this presentation, I have only attempted to interpret the measures of the phenomena observed only in the case that the systems concerned are moving towards or away from the observer in quiet and for small values of  $v$ , and with the inclusion of the transversal velocity  $v_T$  of  $S'$  the DM permits an advance in the representation of the distance of simultaneity.

In any case the use of the DM is presently still limited, since the simultaneity of perception gives to our observation a night configuration of the sky which on account of the sidereal distances takes long periods of time to show small changes, (centuries and millennia) even if the sidereal objects observed have a consistent transversal velocity  $v_T$ .

Nevertheless if we want to describe the whole, taking into account that the system  $O$  and  $S'$  are not concentrated into mathematical point, we need a more in dept observation of the phenomena and more advanced solutions going beyond the DM.

Note : all along, the DELINEATIO MIRABILIS is nothing else than an advance in representation of the phenomena of transmission of image and of their interpretation within the context of the physical universal reality, but is to be noted

that is also obtained through approximations , such as concentration of the systems in physical points and overlooking that  $m-e M_{Heat}$  coming out of the mass as dissipation means real loss in units of mass (as is the case for the sun and all the stars), over and above that, the problem of representation is undergoing further complication due mainly to the fact that with the increase of the velocity  $v$  of the physical mass  $M$  the internal percentages of its mass-energy components are subjected to change and consequently its whole physical characters are gradually subjected to change.

We are then faced with the necessity to represent phenomena internal to a physical mass, which involve large presence of inertial  $m-e$  and are cause of noteworthy retardations of the time phenomenon over an object whose components do not respect anymore the conditions imposed by the UDS ( $0 < v \ll c$ ).

Let us consider (Fig 1) a system  $S'$  assimilated to a point, that travels at velocity  $v$ , in the direction opposite to the Observer in  $O$ , and contains a physical radiating mass in the center, we have that after a time  $t$  has elapsed, the distance  $\rho'$  of simultaneity of existence inside the system  $OS$  is:

$\rho' = (c+v)t > \rho = ct$  and if dissipation comes out of  $S'$  at  $(c-v)$  speed the signal will take a time  $t_{RI}$  to return the image from the position of simultaneity:

$$t_{RI} = \frac{c+v}{c-v} t = \Phi^{-2} t$$

$t_{RI}$  is the time that the image at distance  $\rho'$  moving at a speed  $c-v$  takes to reach the observer in  $O$  and in the above formulation  $t_{RI}$  increases as  $v$  increases.

To determine the distance  $\rho = ct$  the Astronomers are using various methods, all of them approximated and in any case the results of measurements are virtual in nature (no matter if the object observed is moving towards us or away from us...), nevertheless since we haven't a better choice, we accept these distances  $\rho$  as true distances in our graphics and calculations.

The comprehensive formulation is given in fig 1 above.

Note: in the case that  $S'$  is moving at  $v$  directed towards the observer in  $O$ , the image travels at speed  $c$  since the signal from  $S'$  expands from it at a speed  $c-v$  whilst  $S'$  moves at velocity  $v$ , we have to accept that the whole phenomenon of transmission of the image happens at  $c$  speed and takes a time  $t_{RI}$ , it results:

$$vt_{RI} + t_{RI}(c-v) = ct_{RI}$$

That to be verified requires  $t = t_{RI}$ , and we can also see that for  $v = c$  (pure dissipation) we get  $t = t_{RI}$  as banal solution also coming out from the above expression of  $t_{RI}$  since the SUMMA RELATIO becomes  $\Phi=1$ .

With the system  $S'$  moving away from  $S$  we are now at a point in which we know

only part of the answers since we do not know  $v$  and also in this case  $v$  is obtained through the DE since a wavelength of return of image, always will be  $\lambda'' > \lambda$ , one obstacle is now still on the way since in  $O$ , from which the phenomenon is observed, by us, the speed of the light reaching us from  $S'$  is  $c$  (constant)  $c = \lambda'' \mu''_O$ .

Now as in the case of  $S'$  moving towards  $O$ , for  $S'$  moving away from it, is valid the following expression (see [dialogue 9](#)):

$$1) \quad (c+v) t = \lambda'' n$$

Whereas  $ct = \lambda \mu t$  where  $\mu t = n$  and  $c$  and  $\lambda$  are measured at the lab on the point of observation in  $O$ , we obtain that :

$$1\text{bis}) \quad c+v = \lambda'' \frac{c}{\lambda} = \lambda'' \mu \quad \text{where} \quad \mu > \mu''_O$$

Due to the fact that the speed of return of the signal is  $c-v$  and the speed of the physical mass  $v \ll c$  we receive the signal coming out of a point at distance  $\rho = ct$  and moving away from us after a time of reception of image  $t_{RI}$  has elapsed, and the relation in 1 above results satisfied.

This result is important since represents the geometric relation that the  $\lambda''$  measured at the spectroscopie has with the Lorentz's graphic and permits to get the value of  $v$ .

Both measures, of  $\lambda''$  and  $\lambda'$ , (see [dialogue 9](#) fig 2) in practice help to find the  $t_{RI}$  and are physically available values that can be read by us at the spectroscopie in  $O$  for these two simple cases (of  $S'$  moving towards the observer in  $O$  or away from the observer in  $O$ ).

Note: though the speed of the light in the system  $OS$  is  $c-v$  we as observers are supposed here to be inside a true sized gravitational system  $O$  in absolute local conditions of quiet inside which the velocity of the light due to local change of configuration of the ESF switches to  $c$ .

Whereas  $\lambda$  is the standard wavelength of the element of reference, that like  $c$  is measurable in  $O$  as a local absolute value, we have that the  $\lambda''$  and  $\lambda'$  measured at the spectroscopie acquire value only if compared to the wavelength  $\lambda$  measured at the lab where the observation takes place ( $c = \lambda \mu$ ) since (see the expression Fig 2 in [dialogue 9](#)),  $c$ ,  $\lambda''$ ,  $\lambda'$ , and  $\lambda$  are necessary to obtain the value of  $v$ , and now for  $S'$  moving away from the observer :

$$2) \quad v = c \left( \frac{\lambda'' - \lambda}{\lambda} \right) = \mu (\lambda'' - \lambda)$$

I mention here that once obtained, through astronomic observations, the measure of distance of the point where an explosion took place since fragments of mass moved away in all directions, if we can determine the position  $\rho = ct$  of fragments whose light was emitted whilst moving away from us (assuming our position on Earth in conditions of quiet), entering the measurable values of  $\lambda$  and  $\lambda''$  and  $c$  in the 2) we obtain a reasonably accurate and dependable value of  $v$ :

Since we know  $\rho$  and therefore  $t$  now we can determine  $\rho' = (c+v)t$  but then we must be aware that we receive a signal from an object moving away from us at  $v$  speed which is returning to us signals at a speed  $(c-v)$ , this means that with the increase of  $v$  ( $v \rightarrow c$ ) a signal coming out of an object  $S'$ , whilst the distance of simultaneity increases, takes increasingly longer times to reach us:

$$t_{RI} = \Phi^{-2}t \rightarrow \infty$$

It is difficult to figure out an object coming out from an explosion at  $v \sim c$  (as mentioned in page 2 above since to reach higher speeds will be necessary to introduce a dominant Force  $F_D$  as is it done routinely in the accelerators of particles, see page 6 above), nevertheless we can conclude that usually after explosions of tremendous power, from an initial condition in a point, in the past, where the explosion took place, an enormous gravitational mass released objects moving away from that point, always moving below the suggested maximum

$$v \leq \sqrt{.5}c$$

If one of these extra large objects explodes now, and as result of this explosion the very instant in which a piece of physical mass coming out of it, starts to move away from us emits a signal, this signal will return to us at a speed  $c-v$  which will require a  $t_{RI} > t_S > t$  to reach us in future, in agreement with the fact that objects emitting a signal in our present, will be perceived by us at a time of return of image  $t_{RI}$  in the future that keeps increasing with their speed:

$$\rho' = \rho_S = (c + v) t = ct_S = (c - v) t_{RI}$$

The above relation presents the result that  $\rho_S = c t_S$  (the distance of simultaneity of existence and is represented by the product of two finite values  $c-v$  decreasing and  $t_{RI}$  increasing) for :

$$v = \sqrt{0.5} \text{ is } c-v = 0.292 c \text{ and } t_{RI} \rightarrow (1.707/0.292)t \cong 5.846 t$$

This result gives a limit value  $t_{RI}$  but all along we can notice that if an object

moves away up to the hypothetical limit speed  $v = \sqrt{0.5} c$ , from a fixed point that is positioned at distance  $\rho = ct$ , since a signal that proceeds from it, comes back at a speed  $c-v$ , to increasing values of  $v$  will correspond increasing times of return  $t_{RI}$  (and the physical limit for the time of return necessary for the signal generated by explosion to come back is the hypothetical  $t_{RI} = 5.846 t$ ).

The physical meaning of this conclusion is that in the hypothetical limit conditions in which is possible to increase the velocity  $v$  of the physical mass to values close to  $c$  ( $v \rightarrow \sim c$ ) the dissipation will tend to zero ( $c-v \rightarrow \sim 0$ ), and the return time  $t_{RI} \rightarrow \sim \infty$ , a limit condition in which no dissipation and therefore no signal comes out and whatever signal coming out of a mass moving close to  $c$  is of limited power and has low speed and consequently if the physical mass  $M$  is moving away from the observer at these speeds the signal will take an enormous time interval to come back.

This then is the interpretation of a known result since we already know that the physical phenomenon that we call light and travels at local absolute  $c$  speed is  $m-e$  in limit conditions of velocity and cannot dissipate on its own, therefore if it is moving away at that speed from us no hint of its presence will ever come back.

Nevertheless the true meaning of the Lorentz's transformation is in the fact that they offer the representation of positions in real time of the Universal reality also in case we study an explosion, since with the following expression:

$$\rho' = \rho_s = \frac{\lambda''}{\lambda} ct$$

(assuming that the remains of the explosion are lingering long enough for us to measure the point where it occurred) we can develop a technique to detect the various objects moving away.

Once determined the aspect of our surrounding universe containing all the objects surrounding us as if the transmission of the light were an instantaneous phenomenon (we can represent in a map the simultaneity of existence of the objects around us including the development of the physical phenomena in temporal terms compared to our physical reality).

I have considered here the two limit conditions to movement of the physical mass (towards and away from  $O$  at a maximum speed  $v \leq \sqrt{0.5} c$ ) and how the limit cases along the segment uniting the points  $S'$  and  $O$  are developing, I just have to point out that the movement of a physical mass in the universal reality can be in any direction, in respect to the observer and the already mentioned DELINEATIO MIRABILIS which takes into account the transverse component  $v_T$  of the velocity, (see [Ruggeri7](#)) is the tool that can help solving the problem.

P.: I understand that if now we want a more detailed description we must (figuratively through a mathematic expression) enter the systems and detect the phenomena concerning the relativistic time deployment inside these systems (or physical masses) under observation (in respect to the universal time of the Observer).

I.: The description made by an observer residing in a gravitational system considered concentrated in a point, is assumed made in absolute conditions of quiet (but we know that this is not the case and in the explanations suggested I made an effort to supply a bridge between the physical reality and the virtual reality of an observer in orbit inside a planet far enough from the light emitting central star of the system in which he resides as it is in our case) this description is limited, from the physical point, by the capacity to determine the distance of the objects observed within the error constituted by the size of both systems (the one of the observer and the other observed), therefore the representation can only be considered “close to real”.

We can assume other conditions:

- 1) that the system O in which the observer resides is in movement.
- 2) that the system O is not concentrated on a point etc...

We enter paradigms in which the representations becomes virtual and to solve them will be required development of further extensions of the DM, which far exceeds the purposes of this presentation.

What is presented above regards an insight to what was defined Special Relativity (SR) and until now the phenomena to which it refers regard gravitational systems having a large gravitational mass ( $M_{LGM}$ ) in the center and observed at astronomical distances from an observer inside a similar gravitational system, under the hypothesis that these systems are able to send to us a light signal but unable to interfere gravitationally between each other.

Note: the gravitational effects between physical masses inside these single systems with a large  $M_{LGM}$  in the center have been mentioned only in regard of the orbital precessions of geometric character and of the association to precession of the temporal effects caused by presence of orbital velocity and of the gravity of the central  $M_{LGM}$  (see [dialogue 10](#)).

Note: for other gravitational effects internal to the masses of a system at the base of the phenomena causing dissipation see [Ruggeri14 Table 1](#).

The topic commenting the Sagnac effect has not been yet approached and the gravitational interactions between planets (which led to the discovery of the precessional effect of relativistic nature) have been completely overlooked.

My firm opinion is that the whole matter will never be exhausted, but I am satisfied to have covered with my UDS, some of the main points.

The UDS as a science of movement is limited to relatively low values of velocities (if compared to  $c$ ) and tends to refer mainly to the interpretation of phenomena related to gravity, fulfilling only in part the purpose of satisfying the quest for knowledge since if the explanations given are accepted; the mystery that once was the gravity is forcefully replaced by the even more mysterious spin character and so on....

Nevertheless this is the normal process in this type of quests and we only have to humble ourselves in front of the infinite complexity of the Creation.

Presently the extant theories do not satisfactorily include the idea of transformation-degradation causing the emergency of Dominant Force, and the

necessity that the matter must be based on this idea, brought on the introduction of the principle of equivalence, nevertheless the whole subject has not yet been developed systematically into a theory and this is what the UDS stands for.

This development is mainly due to the fact that the concept of transformation-degradation needs the introduction of the presence of the Ether/ESF as the basic substance subjected to a cycle involving these phenomena, and at the same time the possibility that transformation-degradation, by definition, is changing status of existence of a substance subjected to the phenomenon, seems to be a concept totally unknown and extremely difficult to be perceived and be accepted.

The basics extant assumptions of GR prevailing today, then, are such that results impossible to hypothesize the absorption of the ESF by a physical gravitational mass and the opposite phenomenon of absorption by the ESF of the mass-energy  $M_{\text{Heat}}$  coming out in dissipation from the physical mass, and dogmatic pronouncements are intended to take into account how the physical masses are affected by presence of variation of internal inertial mass values and how presence of gravitational depression of a physical  $M_{\text{LGM}}$  affects the time phenomenon inside a gravitational mass, and no one mentions that a system to be relativistic needs to entrap the ESF becoming a physical entity in which the internal observer is measuring all phenomena as local absolutes, just as if it were in conditions of absolute quiet (since it results that all the objects that are contained in it are in a condition of virtual quiet).

The change of characters and physical behaviors that a physical gravitational object mass acquires in movement  $0 < v < c$  since with it becomes loaded of inertial m-e are eventually changing drastically the nature of the phenomena that we perceive and the search for these changes which just started (since in the UDS the phenomena studied comply with velocities of the physical masses  $0 < v \ll c$ ) requires experiment and formation of basic knowledge of empirical nature before new acceptable theories can be conceived.

In my theory, I come up with the description of the reactive power of the field of depression of the ESF (caused by the absorption and transformation into neutron m-e  $M_{\text{RM}}$  to which the ESF is subjected when absorbed by presence of the gravitational mass-energy  $M_0 = M_{\text{RM}} + \Delta M_{\text{ESCM}}$  in the physical mass  $M$ ) and how this field, generates with its presence transformation-degradation, and is acting over physical gravitational masses including the same gravitational mass which caused it, and the description of these internal phenomena and how in large gravitational physical masses they end up in dissipation of m-e  $M_{\text{Heat}}$  inside the ESF which absorbs it .

The concept of open cycle of transformations-degradations affecting the physical mass through a concatenation of events is the necessity pervading this theory, with the proviso that passage of status of the physical substance (mass-energy) firstly means release of Dominant Force, and this can take place in various consecutive steps of degradation of the conservable spin character of the basic particles, that gradually end up in a final condition called dissipation in which the spin character is fully released into the ESF.

Note: dissipation of m-e  $M_{\text{Heat}}$  is not the end of the transformations since as

dissipation hits a physical mass on its way (as it happens here on Earth) a new series of phenomena of extreme interest takes place (as in our planet, they are responsible for the many transformations-degradations that ultimately produced the rise of life).

The problem of representation of the Universal reality (which is at the base of the UDS as physic discipline) does not stop, then, at the description of gravitational phenomena since the m-e endowed of spin coming out of a gravitational mass as dissipation (absorbed by the ESF) whilst moving away from the source can find other physical masses on its way and whilst hits their surfaces local transformation-degradation permit that it can be harnessed in order to produce phenomena of movement (a dynamism, which mainly is the field of Quantum Mechanics).

We can mention that in a large physical gravitational mass  $M_{LGM}$  release of basic particles in a status of adhesion, through internal gravitational transformation, is always associated to Static Force which constitutes the first step of the consecutive series of transformations-degradations ending up into dissipation, this and other phenomena are studied by the UDS which when a mass develops movement, limits its search to a range of  $v \ll c$  for the masses under examination, since as mentioned when  $v$  is subjected to substantial increases the physical mass acquires substantial extra quantities of energy of movement and gradually loses its initial identity until for  $v$  close to  $c$  becomes a soup of quantum particles mostly of inertial character, resulting made up of m-e components unidentifiable with the original mass ).

A Dominant Force can be inserted in a physical mass during a time interval and that corresponds to an equivalent insertion-absorption, during the same time interval of a flow of m-e as basic particles introduced at increasing speeds, and this phenomenon is quantified through the concept of Total Force as described, belonging to a physical mass.

Note: In the graphic called DELINEATIO MIRABILIS developed from the graphic of Lorentz, the system O of the observer is concentrated on a point whereas the system in movement is considered to be a system similar to our solar system, further considerations and modifications could be included in order to take into account that O could also be a solar system (as indeed is if we attempt to describe the universal reality from Earth).

Note: We do not know if a system is in absolute state of quiet but we know that inside our solar system the Sun is closer to it than us on Earth, though we know for sure that our solar system is not on absolute status of quiet.

Of this we are sure now since the astronomers have, of late, discovered that the solar system is also orbiting around the centre of our galaxy at an undefined speed of the order of 100÷200 km/sec and that our galaxy maybe involved into a complex movement ruled by gravity, with a cluster of nearby galaxies at unknown value of velocity.

We then can reach the conclusion that Earth as a separate system, entrains inertial mass as a field of particles endowed of unidirectional spin and these

particles have tendency to transform the surroundings of our planet in such a way that the planet Earth and its surroundings tends to be absorbed by the external ESF.

Whilst these particles are still adhering to Earth the combined effect of the gravitational pull of the Sun and of directional velocity finds equilibrium developing the orbital movement, whereas, separately, the spin character cause of the rotation of our planet around its axis, can be possessed by Earth on its own as an under posed phenomenon.

All this movement peculiarly does not affect substantially the gravitational relation we have with our planet, expressed through the static Force keeping us glued to its surface in conditions giving us the virtual sensation to be in quiet.

Note: the amazing truth confronting us is in the fact that gravity through development of orbital path and local restricted conditions of quiet of a whole system can permit a physical mass to be subjected to more than one separate field of unidirectional inertial m-e responsible in the end of superimposed fields causing different forms of superimposed movements.

The entire treatment of the relativity of movement, transcends the purpose of this short paper but I reckon that a certain amount of awareness should have been communicated to the reader in regard of the absolute conditions and of the fact that with the development and successive use of graphics we can be enabled to describe real and virtual situations, in which the movements are absolute, or locally absolute and reach the conclusion that the true definition of relative measure is difference between absolute (or locally absolute) movements of systems.

Introduction of real and virtual conditions of existence, then, complicates the phenomena observed since we must extricate ourselves case by case through an exact physical assessment of the situation of movement.

This produces the comment that if a gravitational system O has an absolute velocity  $v \ll c$  this corresponds to presence of inertial m-e inside it, capable to entrap and move the surrounding ESF at the same velocity  $v$ .

If now we consider a system S' inside it, in orbit under gravitational pull by the central mass  $M_{LGM}$  of the said system O, its orbital trajectory should remain invariably bound to Newton's Law (to the universal constant), and this will permit the measurement of the local absolute time of the system, but by necessity we use a clock made up of the physical mass available locally, which results subjected to a double condition of time retardation a) determined from the inertial m-e contained in virtue of the orbital velocity  $v_0$  around the central gravitational  $M_{LGM}$  and b) determined by the local value of depression of the ESF (caused by the gravity of the central mass  $M_{LGM}$ ).

Note: rotation of the system S' around its axis also contributes to time retardation but on Earth, given the small value of inertial mass involved is ignored in most cases.

In conditions of absolute quiet, the open cycle of degradation can be referred to the coefficients, k of gravitational absorption of the ESF by the physical mass and

to its gravitational counterpart  $k_{el}$  which reflects absorption of m-e  $M_{Heat}$ , by the ESF, in conditions called “dissipation from the physical mass” (see [Ruggeri8](#)) and we have that inside a system (having a mass  $M_{LGM}$  in the center), the constant presence of the inertial content (forms an alloy with the surrounding ESF which) constitutes a field of m-e surrounding the  $M_{LGM}$  in local conditions of quiet.

This alloy does not have the same density of the ESF since contains inertial m-e and change of density in the whole system is the cause retarding the measure (made through a clock) of the time of transformation-degradation in the system in respect of the time measure of transformation-degradation made outside it in the ESF in a system in absolute conditions of immobility using an identical clock of reference.

A clock inside a gravitational object in permanent conditions of orbital movement around the central  $M_{LGM}$  of the system can measure the time phenomenon (Newton's time or local absolute time) of the center of the system and this measure of time of the center of the system is shared with all the other the gravitational objects (satellites) in circular orbit around the  $M_{LGM}$  but what must be taken in consideration is that each and every clock present in the various satellites is made up of a physical mass whose physical phenomena are subjected to the temporal retardation caused by presence of inertial m-e and by the local value of the gravity of the  $M_{LGM}$ , (the Hafele-Keating experiment gives an example on how to use identical clocks in base of these explanations, both in regard of the inertial m-e (associated to Earth rotation) and of the gravitational depression).

Note: time measurements in SR are confronting the developments of physical Laws between systems and since the alloy ESF- $M_{ESCE}$  is changing density of presence of substance, they are exclusively bound to the relation between inertial m-e  $M_{ESCE}$  and ESF (for  $v \ll c$ ), and this (on condition that M in absolute quiet is referred as  $M_0$  and therefore  $t$ ,  $c$ ,  $k$ , are absolute universal values) can be resumed in the following expressions:

$$\frac{t_R}{t} = \frac{c'}{c} = \frac{k'}{k} = \frac{M_0}{M}$$

The paradox consists on the fact that we on Earth whilst we measure Newton's time within the reality of the solar system, simultaneously measure “virtually” in local absolute conditions the speed of the light  $c$  and the constant  $k$  both bound to a transformation of local universal character copied inside a local mechanism (the clock).

The measure in SR of these local absolutes with an instrument (the clock whose physical mass is loaded of inertial m-e and therefore in retardation of the time phenomenon), offers a condition which makes of the clock a foreign body if we transfer it in another system loaded with increased or reduced amounts of inertial mass-energy that increases or decreases the time measurement shown in it.

Note: the case in which the clock is measuring the true absolute time (as in the above expression and in Lorentz's graphics) only foresees decreases of time measurements corresponding to the absolute value of  $v$  when the clock is moved

from the system in quiet to the one moving at  $v$  velocity.

For the case GR in which a clock is moved from a satellite to another the additional temporal effect caused by presence of the gravitational depression of the ESF must be considered, see the [Appendix](#).

Note: I had always a keen interest in the physical Science which along the years of professional activity as Engineer never faded but unfortunately, for years I was restricted to pure speculation which kept the challenge open until I had the time to dedicate my efforts to the subject.

The theory I present has the purpose to refine the existing gravitational theory and is based on the interpretation of phenomena of relativistic nature observed and reported and I hope will be of use, if and when accepted, I add an [Appendix](#) to this dialogue and in the whole I hope to have been able to produce enough interest towards a book that for long has been in a “final stage” but presently does not satisfies my “sense of completeness”, a necessity that surely will still keep me happily occupied for some times in future...

The discussions with P. in the friendly terms above related went on for much longer, but here I reported only what I thought relevant to the purpose of introducing my UDS which being mainly concerned with gravitational phenomena and relativistic phenomena restricted to limited ranges of speeds, tries to shy away from the electrical and magnetic phenomena, since with them one enters the brand new field of QM where the matter is becoming more complex and garbled. (see [Ruggeri16](#))

To these eleven dialogues, I added a twelfth chapter presenting general comments and conclusions on the important topic dealing with our presence on a planet from which, given the immense scale of the Universe, permanent escape seems forbidden, in it I agree heartily with those who affirm that we as humans must make the utmost effort during our stay on our Earth to maintain and improve life conditions in it, for our good and for the good of all living creatures, since Earth is the fertile place that nourished and shaped us and all the other forms of life up to present, I feel confident to conclude that we must recognize the subtle bond that our human nature has with our Earth as living place, since it is the one that will have to last up to the end of days.

## [Appendix](#)

### Beyond Relativity, Duality of Reality at $v \ll c$

In SR : a) Relativity of Lorentz: geometric along  $\rho = c t$  ,  $\rho' = c' t_L = (c-v)t$

$$\frac{t_L}{t} = \frac{c-v}{c'} = \sqrt{\frac{c-v}{c+v}} = \Phi \quad (\text{SUMMA RELATIO})$$

Note: the term  $\rho' = c' t_L$  with  $t_L$  called Lorentz's time necessary to bridge the distance  $\rho'$  at  $c'$  speed, has no physical reason since the distance  $\rho'$  is bridged at  $c-v$  speed but is of use to get  $\Phi$ .

b) Relativity of Einstein: temporal correspondence inside the system  $S'$  in movement in respect of  $O$  in absolute quiet:

$$\frac{t_R}{t} = \frac{c'}{c}$$

Geometric-temporal correspondence due to alloy of the field of inertial m-e  $\Delta M_{ESCE}$  with the absolute field of ESF.

$$\rho_R = c' t_R \Rightarrow \rho = ct$$

Note: the above expression gives a three-dimensional scale relation between the two systems which reads:

$$\text{Scale}'_{3D} = \frac{\rho_R}{\rho} = \frac{c' t_R}{ct} = \frac{c'^2}{c^2} = 1 - \frac{v^2}{c^2}$$

The meaning should be that in SR, between a generic geometric distance  $\rho$  inside a system  $O$  in quiet and a correspondent geometric distance  $\rho_R$  inside a system endowed of inertial m-e (moving at relative  $v$  absolute speed) is valid the following relation:

$$\rho_R = \left( 1 - \frac{v^2}{c^2} \right) \rho$$

The volumetric relation between relativistic systems in SR, if we could assume that the field of inertial m-e alloyed with ESF has an Euclidean connotation, can be represented by a ratio of densities (denoting conservation):

$$\frac{M_0}{M_0 + \Delta M_{ESCE}} = \frac{\delta'}{\delta} = \frac{k'}{k}$$

In GR: 1) precession as relativistic geometric advance along the circular orbital

path of radius  $r$  constitutes one of the proofs of the existence of the Ether/ESF based on amplification  $2\pi v_0(r)$  of the striction  $dr = v_0(r)^2/(2c^2)$  m/sec taking place inside the reactive field of depression of the ESF caused by gravity whilst the whole system is in conditions of quiet (real or virtual), where  $v_0(r)^2/c^2$  is the value of gravitational depression of the ESF at  $r$  distance from the center of the system.

To striction  $dr$  is associated the unbundling (continuous transformation-degradation) from  $M_{RM}$  to  $M_{ESCM}$  affecting a gravitational object resting over the surface of a large gravitational physical mass:

$$F_{\text{Starter}} = M a$$

$$F_{\text{Starter}} \cdot 2dr = F_{\text{Starter}} \frac{v_0^2}{c^2} = \Delta M_{RM \rightarrow ESCM} c^2 \quad \text{kJ/sec}$$

Unbundling of gravitational mass  $M_{RM}$  at rest  $\Delta M_{RM \rightarrow ESCM}$  (is degradation of mass-energy in presence of gravity from the gravitational status of  $M_{RM}$  to the status of  $M_{ESCM}$  also gravitational).

2) Unbundling affecting a gravitational object in circular orbit of radius  $r$  around a large gravitational physical mass:

$$F_{\text{Starter}} \cdot v_0 \cdot 2dr = F_{\text{Starter}} v_0 \frac{v_0^2}{c^2} \quad \text{kJ/sec}$$

Geometric precession along the circular orbital path of radius  $r$  :

$$\Delta_{\text{PGEOM}} = 2\pi v_0 dr = 2\pi v_0 \frac{v_0^2}{2c^2} \quad \text{m/sec}$$

The time relativistic retardations of the clock in orbit referred to a clock measuring Newton's time in the center of the system are two and the first is due to inertial m-e present (the phenomenon is the same as in SR) whilst the second time retardant effect (twice the value of the effect due to inertial m-e) is due to the presence of gravitational depression of the ESF acting over the mass  $M$  in orbit of  $r$  radius .

The general formulation giving the time discrepancy between a clock measuring the Newton's time in a system  $O$  in orbit and an identical clock synchronized with it in  $O$  and transferred in a system  $S'$  also in orbit around the same  $M_{LGM}$  requires that the two systems in orbit return in collimation after an interval of time  $\Delta_T$  with a far sidereal object along the orbital radius :

$$\frac{\Delta t_{\text{PTEMP}}}{\text{sec}} = \frac{\Delta t_{\text{INERT}}}{\text{sec}} + \frac{\Delta t_{\text{GRAVIT}}}{\text{sec}} = - \frac{v_{0O}^2 - v_{0S'}^2}{2c^2} - \frac{v_{0O}^2 - v_{0S'}^2}{c^2} \quad \text{sec/sec}$$

Note: ad hoc applications of the above formulation are made in the Hafele-

Keating experiment and in the GPS and both confirm its validity.

Note: whereas in the Hafele-Keating experiment the precession can be ignored and the orbital velocity is replaced by the velocity of rotation of Earth around its axis, in the GPS the first clock is not in orbit but moves at the velocity of rotation of Earth around its axis and the second clock results contained inside the second mass S' in orbit therefore its presence is inside a mass in precession (see [dialogue10 fig 2](#)).

As can be noticed the relativity phenomena are varied and based on physical conditions which do not restrict them to a few samples, but according to the particular observation they must be detected and explained and necessary approximations made before calculations.

In the other hand disturbing questions can arise when we query about the speed at which perturbations of the gravitational permanent (or extremely low variable) fields of absorption and flow of the ESF, at the base of the gravitational phenomenon, are transmitted, and about the discrepancy between the mathematical assumptions of infinity and the logic conclusion that it is impossible to have a field of m-e whose influence can be extended to infinity.

From this point onwards the path forward is undoubtedly problematic since a number of questions will also involve a foray in the field of Philosophy and Religious perceptions.