



RESEARCH ARTICLE

RECONSIDERATION OF THE GRAVITATIONAL AND FUNDAMENTAL ELECTROMAGNETIC FORCES
DEMONSTRATES THAT THEIR PRINCIPLES AND PHYSICAL PROCESSES ARE ANALOGOUS OR
SIMILAR IN THE CONTEXT OF EVTD² THEORY

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ABSTRACT

The basis of this primary and essential standardization of initiators physical principles strong approximation (new concept in EVTD² theory) concerns the gravitational fields and those appearing in electrostatic. The standardization lies in realistic taking into account of surfaces emissions effects in the space-time (neutral and charged masses) according their equivalent black body temperatures T_e . This reconsideration allows concluding the integration of gravity to electromagnetic force in a third specific case – two neutral masses. More, considering that there would exist three mini black holes (MBH) on the gravitational axis of the neutral or charged masses (one in every gravitational center and another in the zero resulting potential point O) better illuminates the phenomenological physical comprehension of attractions and repulsions for these two forces of classical physics. A specific statement for electromagnetic repulsion: the MBH in O must be replaced by a mini white hole (MWH) acting as a repulsive geysers.

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INTRODUCTION

In the EVTD² entities theory, the space-time without condensed matter as well as those internal to the matter itself is finely structured in a total quantic way, e.g. for the three directions and also in time (Conte, 2006; Conte, 2007 and Conte, 2010). Structurally, this means Volume entities a priori cubic, very small (close to the Planck length) that are Deformable and Energy filled resulting from vibrational animation (Dynamic). All points in an entity are in phase and that means they are Temporal between them. These entities were named EVTD² entities and they are quantum structured by a longitudinal electromagnetic wave that can propagate in the whole Universe. The last one is in all three directions as to be able to generate these little volumes (a gravitational wave would be not suitable for that). This is yet another n^{th} brief remainder of the EVTD² entities theory basis (initially proposed since 2002), structuring the universal space-time. This later could be considered as being assimilated to an entire quantum coherent fond as a base for the whole Universe from the less dimensions till those extremely big.

Thus, the coherent fond would result from a stack in the three directions of quantic EVTD² entities, in opposite alternate phases. Our three recent papers (clearly show that there are hybrid and equivalent relationships for Newton, Coulomb ones, as well as for the bodies' free falling acceleration. This are obtained by respectively replacing the masses and the electric charges only by the equations of the considered bodies surfaces emittances in equivalent balance black body temperatures (T_e to the power four). The hybrid relations' constants are different from those in classic relationships. Their reminders from previous work are the following relationships:

For the gravitational force [Conte 2017]:

$$R_{EL12} = C_{EL} \frac{T_{e1}^4 \cdot T_{e3}^4}{d^2} = F_{G12} = G \cdot \frac{m_1 \cdot m_2}{d^2} \tag{1}$$

and on the other hand, for the electrostatic force, established and formulated in [Conte 2017]:

$$F_{T_e q_1/q_2} = D_{T_e} \frac{T_{eq_1}^4 \cdot T_{eq_2}^4}{d^2} = F_{A_{q_1}/B_{q_2}} = k \cdot \frac{q_1 \cdot q_2}{d^2} \quad (2)$$

The two new constants of hybrid relationships were determined as having the following respective values [Conte 2017, Conte 2017]:

Concerning the new hybrid expression of gravitational acceleration on a celestial body [7], its remainder is:

$$g_{as} = X_{EL} \frac{T_{eas}^4}{(r_{as})^2} = 9.5752792 \cdot 10^4 \frac{T_{eas}^4}{(r_{as})^2} \text{ m} \cdot \text{s}^{-2} \quad (3)$$

with the ray (r_{as}) of the celestial body were happens the free falling, and where the constant $X_{EL} = 9.5752792 \cdot 10^4 \text{ m}^3 \cdot \text{K}^{-4} \cdot \text{s}^{-2}$.

For the falling mass was arbitrary considered the representative unitary value for the Newton law (1 kg). In the relation (3) it is not necessary to take into account the falling object parameters because being about the equivalent surface temperatures, it is natural to attribute the same T_e to the falling body as the T_{eas} , the temperature of the surface of the celestial body where the free fall takes place. Then it is normal, no falling body's parameter to be considered in the hybrid relationship as *it globally plays only the simple role of presence* (this is what is ultimately found in the various cases of free falling bodies).

RECONSIDERED GRAVITY BASIC PARAMETERS AND PHYSICAL PHENOMENA IN THE EVTD² ENTITIES THEORY:

Current Classical Physics does not make evident the physical phenomena and the real parameters that would favor a phenomenological understanding of the gravity, wherefrom no actual explanation, except the relative consistent relationship (Newton) on these phenomena finding (for not too small dimensions). It is so possible, as is, to propose a theoretical understanding based on existing phenomena and with physical logic teachings, but also inside the quantum entities theory EVTD² of coherent fond of the whole Universe. First of all we must remember that we have advocated [Conte 2015, Conte 2015] that the so-called *gravitational field of an electrically neutral mass could irradiate in all space-time only by means of energies this mass could issue outside of herself*. In our knowledge, the only sufficiently predominant emitted effect from the electrically neutral masses, is the one generated by the temperature higher than 0°K, which is called black body irradiation equivalent to its surface temperature T_e . Consequently, to attempt understanding it is undoubtedly to take into account the mass surface outward emission of quantum photons relative to this condensed matter property. The two emitted photons flows (for both bodies in gravity) are therefore superposed on the quantum and electromagnetic coherent fond itself, of the space-time considered in the EVTD² theory. So, in this conjuncture, the two considered spatial, electromagnetic, quantum structures are superposed and could agglomerate harmoniously - it's a very interesting point to its consistent duality. Also we have recently claimed [Rosca 2017, Rosca 2017, Conte 2017], as a result of the new structure of the gravitational field, that three mini black holes (MBH) would exist for the gravity between two masses: a MBH would be placed in the center (or simply inside) each of the masses and a third one would be at the zero resulting potential level (in O) on the gravity centers' axis. The last MBH is the most interesting and it was demonstrated as perfectly possible by destructive interferences [Conte 2015,

Conte 2015] of photons flows irradiated by each mass arriving in opposite direction in the area of O . Indeed in [Conte 2015] are calculated the lengths of certain integer levels in h quanta for the photons arriving in the point O from each celestial body, e.g. for the case Moon – Earth. In this little area of O (remainder) were found perfectly equal following lengths (on the mass centers' axis) for the Moon and respectively Earth:

The consequence of this is that these levels equal lengths may be considered analogous to the in O incoming flow wavelengths, and *thus the photonic interferences can be perfectly destructive* (hence, actually a MBH in this case since no electromagnetic wave can escape). This highly efficient interference, can be ultimately considered similar to the energy compaction [9] between the two photon flows (energy). Thus will be a reciprocal attraction of both emitters (the two considered masses) through their emitted flows that vanish in the positive pressure area of MBH of point O , *hence the physical analogy to a sucking siphon* [7]. The compacting work is made possible by the electromagnetic wave existence and its formatting and permanent renewal work of the EVTD² entities. *Ultimately, as we have already mentioned that the MBH from O is attracting each of the masses to him, while it seems that it is the masses that attract each other: this latter perception is only an illusion in Physics!* Hence the question: active gravitation between masses themselves does it really exist? *If not these masses would play only a passive presence, with their properties and characteristics in the right place at the right time!* So, most of the work giving gravity is generated by the coherent fond related to properties of the EVTD² space-time. In addition, for a good agreement between the two gravitational force relationships: hybrid Newton's, it is necessary that there be good correlation between the bodies masses and their T_e temperatures used under the equality (1) of relationships here recalled in the introduction. This is linked to physics logic: more the mass of the considered body is important, the greater the number of electrons in this condensed matter. So in fact, there will be more emitted photons, which will favor the appearance in the mass of more energy. It follows that this relatively big mass will have a higher intrinsic temperature, hence a higher surface T_e . *So the concordance recalled in (1) of the Newton's and hybrid relationships is logically resulting from taking into account the masses (newton's law) on one hand and, on the other hand, the corresponding temperatures T_e of their surfaces* (the hybrid relationship). This is, briefly exposed, the new basic phenomenological conception which leads, in EVTD² entities theory, to the understanding of the gravitational attraction force without necessarily appealing to Newton's relationship which is, after all, a certain linking of a natural experimental observation.

RECONSIDERED ELECTROMAGNETIC FORCE BASIC PARAMETERS AND PHYSICAL PHENOMENA IN THE EVTD² ENTITIES THEORY

The considerations of the physical phenomena occurring in the expression of the fundamental electromagnetic force between two conductors electrically charged, inside the EVTD² entities theory, is *a complementary continuation of the precedent chapter 2 concerning the conception on the gravity*. Indeed, the electric charges are compulsorily carried on the surface of a conductor of condensed matter (e.g. a mass). It also turns out that in the case of an electromagnetic force, in accordance with Chapter 2, each of these conductors emit flow of photons by their own T_e surface temperatures. Anyway, it is firstly the

establishment of the conditions as the gravity between the two masses electrically charged can be logically generated. Also, *it is secondly and more specifically to look for the effects that bring to the charge itself supplementary electrical charges whose properties would superpose to the little primarily gravitational effect.* The electron or proton charges (in the simplest cases) will localize in the conductor surface immediately internal neighborhood. Moreover these charges are certainly animated in fast movements resulting of the unstable equilibrium related to multiple reciprocal repulsions (neighbor charges of the same sign). Thus, *E-monopolar electromagnetic waves will be generated for every type of charge and they will longitudinally propagate by shock-impulsions on the EVTD² entities of the coherent fond.* This occurs because of very short almost linear oscillating displacements of charges in the vicinity of their equilibrium positions (conform to EVTD² entities theory). Ultimately, as a result of charged masses two characteristics, it will follow that in the surrounding space-time of these bodies will appear a superposition of these two kind of electromagnetic waves: one sinusoidal generated by the black body of the mass itself (charged) and another (longitudinal) one caused by the electric charges which are additional in this case. These two types of electromagnetic waves will, following their criteria, participate in generating the global T_e of the charged conductor surface. Thus, the two photon flows and special waves, intrinsic to each of two considered charged conductors, can add up in accordance with their common structures and reciprocally interfere, especially in zero resulting potential! In this case of charged masses, will occur an increase in energy flow, let us say initial, of the mass itself with the addition of the second monopolar waves flow (much more intense) generated by the electric charges according to their global values.

In addition, more the overall electrical charge will be important, more electric charges will be placed and will move in depth under the surface (repulsion of identical charges already in place primarily near the surface). So, the flows emitted deeper under the surface will be more absorbed (as to be placed outwardly from the surface) than those emitted by the charges in the proximity of the surface (there is less matter thickness to cross). Thus, a little decrease will occurs in the flow finally sent in outer space, which induces temperatures T_e that will not be linearly increasing in relation to different linearly increasing levels of charges. *This is acompliance found in the study* [Conte 2017], chapter, 3 for the hybrid relationship. This last study allow to corroborate the levels of electrical charges on each of the conductors and the corresponding values of surface temperatures according to the electrostatic forces determination by equality of Coulomb relationship on one hand, and on the other hand, the hybrid one in T_e , formulated in [6]. In deduction there is nothing surprising, for all those reasons of efficiency, that these twomono polar flows in E are significantly higher (quantic in electron volt eV , following their necessary consideration reflected in the work [Conte, 2015] and that this is caused by the electrical charges themselves. This compared to generated photons (in Planck quanta h) by electrons in condensed matter that are diminished more by flows protons generated (the atomic nucleus) in balance in the natural matter. The energy level of the electron volt eV is higher than the photons quantum h . It follows, in fact, that *the electromagnetic force is much important than that generated by gravitation: here in correlation with the respective electromagnetic wave flows consisting in weak gravitational fields and much stronger*

additional electrostatic fields. It results that the superposition of each of these two photonic flows, for each of two considered charged masses, will move in the whole environment, and especially towards the MBH localized on the gravity axis, on the point O of zero resulting potential. In this MBH will then appear destructive interferences (the same characteristics and process as for the gravitation [Conte 2018]) generating a “vacuum siphon” [Conte 2015] that will suck the two charged (opposite signs) and emitting masses towards him (hence reciprocal attraction towards O because this one is an attractive pole of energy and, thus of masse because $E=mc^2$). Indeed, it was found that the lengths of unit levels in eV quanta were also, in zero resulting potential, identical from each of two charged conductors’ surfaces. In the example calculated in [13] was found the equality (remainder):

$$d_{n_{o-1}} - d_{n_o} = 6.073057 \cdot 10^{-33} \text{ m and}$$

$$d_{p_{o-1}} - d_{p_o} = 6.073057 \cdot 10^{-33} \text{ m.}$$

Therefore, in this understanding of the electromagnetic attraction, once again the MBH positioned in O is the one having the main role in the attractive effect and not the masse itself. With regard of the specific case of *the electrostatic repulsion between charges with the same sign*, and accordingly to the logic above mentioned for the electromagnetic attraction, rather the existence of a mini white hole (MWH) must be advocated and not the existence of a MBH in O , in the specific different conjuncture. The MWH would play the role of a gushing fountain, with negative pressure, ensuring the repulsion between emitters of the same electrical sign by their identical polarity that cannot generate destructive interference in O : *hence, on the contrary, here not vacuum siphon but a “repulsive geyser”.* Indeed, here the little area surrounding O represents the place where, for example, a same sign charged particle as the two considered ones is apparently equally repelled with the same force by the two charged masses having the same polarity. Thus, the mentioned particle will be ejected from its position along a path initially perpendicular to the charges’ gravity axis.

UNDENIABLE RESEMBLANCE OF BASIC PHYSICAL PHENOMENA INITIATING GRAVITATIONAL AND ELECTROMAGNETIC FORCES IN NEW PHYSICS EVTD² STRUCTURING THE SPACE-TIME

All previous analysis firstly leads to conclude that the fundamental gravity force, so far independent of the other three fundamental forces, must be intimately connected with the electromagnetic force since it appears at the same time for electrically charged masses. Indeed, this general reminding of *gravity as part of the New Physics EVTD² is here perfectly correlated and harmony in almost unitary bases governing the electromagnetic force also revisited in this theory.* One can even *advocate that basically, the gravitational force is an integral part of the electromagnetic force* (Chapter 3 above) as it appears with the presence of charges that are brought imperatively by an electrical condensed matter conductor (hence mass then possibility of gravitation). Wherefrom, in conclusion, gravity itself is part of the electromagnetic force as its third special case. Indeed this gravitational force of relative small magnitude, is thus added, very weak, to the electromagnetic attraction force itself, while in the case of repulsion this effect of gravitation is very weakly opposed to

the repulsive electrostatic effect (here the two forces are of opposite signs). To prove this, it would be enough to show that the difference between the total attractive force for two charged masses of opposite signs and the repulsive force for the same masses but with charges of the same sign is twice the value of the gravitational force exerted between them. The unitary characteristic of a close correlation approach between the two mentioned forces and representative of suitable physical phenomena which take place in all three cases in the surrounding hot area of zero resulting potential (O) is that *masses and charges introduce in this space-time only their intrinsic electromagnetic properties*. This is where the attractions or repulsions are organized according to the circumstances of considered neutral masses and those with additional electrical charges. In addition to the point O , the latter will suitably combine for driving, by the electromagnetic wave EVTD² formatting working, to the creation of an attraction or repulsion, strong or weaker towards the MBH positioned in O , according to the three cases that have just been mentioned.

Conclusion

As part of the New Physics EVTD² the premise for a unification between the gravity and electromagnetic forces appears logically as a result of this study but also previously deduced from work [Conte 2017, Conte 2017]. Indeed, hybrid relationships to those of Newton and Coulomb already show that they are exactly of the same form by taking into account in both cases as single parameter, the black body equivalent surfaces temperature (T_e) of the concerned bodies (without using the conventional masses and charges in respective hybrid relationships). *Thus the gravitational force will no longer be isolated from the other three fundamental forces, being one of three special cases of what is still called the electromagnetic force in Classical Physics*. It remains to study the two forces, strong and weak, in the context of a fully quantum space-time of EVTD² entities theory and highlight, perhaps, the findings for a unification between the four fundamental forces (of Classical Physics) or the three fundamental forces (New Physics EVTD² entities), which logically should ensue. Regarding this new unified force (gravity and electromagnetic), it can be designated by *the electromagnetic force EVTD²* as a result of revisits and standardization of these two forces priori separated and conventional. This would bring the number of fundamental forces to three with weak and strong ones. This number might not be definitive if the last two forces may be included in this EVTD² electromagnetic force or another more general and unified. But maybe it is ultimately the gravity force that holds the unifying thread, based on electromagnetism, because for all the fundamental ones is a mass that holds or not, other additional elements and so it always appears gravity in each! But as the intensity of the latter is really minimal compared to the other three it was not possible until now to make it apparently in the last!

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