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CALCULATIONS OF THE MINI BLACK HOLES SIZE, PRESENT TO ZERO RESULTING POTENTIAL, IN QUANTUM GRAVITY EVTD2. PHOTONIC FIELDS RADIATED BY MASSES BLACK BODY BALANCE TEMPERATURES ARE THE GRAVITATIONAL QUANTUM FIELDS

Ileana ROŞCA, Michel CONTE

Abstract: *This publication follows in this review the works [1-3]. In this paper are proposed suite and additions to the assumptions of [4-5], in quantum gravity EVTD^2 [6-7], relatively to the quantum photonic gravity potential energy. The notions of black holes respectively positioned at the level of the zero resulting potential (O) of these pairs of bodies are utilized here for their energetic characteristics to determine the volume dimensions of the black holes.*
These mini black holes (MBH) would be approximately estimate as very thin disks and, placed normally on the gravity centers' axes. The study concerns the different MBH relative to the eight duos Sun and its planets [1-2] as well as the duo Earth-Moon [3].
The equivalent photonic energies, studied under the new EVTD^2 hypothesis, are compacted in MBH and can be correlated with equivalent masses (by E=mc^2 [8]) who, fictitiously placed to zero resulting potential, would provoke the same potential accelerations. The calculated and approximated dimensions seem naturally compliant.
Key words: *Multiple black holes, photonic quantic potential, quantic photonic compacting, quantic Gravity EVTD^2, quantic Substratum, EVTD^2 entities theory, gravitational acceleration and compacting acceleration correlation.*

1. INTRODUCTION

It is a particularly remarkable point that must be mentioned again ***in this quantum gravity EVTD^2: level lengths, respective to each of the masses, different from a quantum photon energy*** *h*, ***compared to neighbors and being located in O, are of identical lengths*** [9].

For example, for *Earth-Moon, lengths are reciprocally: 1.989896·10^{31} m [9], while for the duo Sun-Earth the common value, calculated in a similar way was: 1.1131327·10^{-31} m*. It is then necessary to deduce that each of the quanta arriving in *O* from each of the masses has, in a way, the same wavelength (identical lengths of the previous levels for each of these photons).

This is absolutely essential and let's say that there are ideal conditions for interfering or compact *as part of the mini black hole, which would be in O*. ***This mini black hole would thus realize all properties to be the "engine" in function to ensure the gravitational attraction from himself: what would then be no more the essential role of the two masses***. *The masses would put in place their gravitational fields by photonic emissions (h·f) of equivalent black body*.

So in this study which is being considered for trying to find a proper approach an adequate estimate of these various MBH dimensions, placed in zone *O* to the different duos of examined celestial bodies.

With regard to the new physics EVTD^2: in this Coherent background it would exist a *substrate* of something that has been called here *Substratum* [10-14] and, which would give this diffuse energy by its vibratory animation of EMW. Even the demonstration $E = mc^2$, based on EVTD^2, verifies [8] without postulate that mass is an energy realization and a concentration of this equivalence.

2. COMMONS BASES FOR THE NINE DUETS OF SOLAR SYSTEM [1-3] STUDY

From Newton's law we deduce the relation (1) with the equal following reports:

$$\left(\frac{OM_1}{OM_2}\right)^2 = \frac{g_2}{g_1} = \frac{m_1}{m_2}, \qquad (1)$$

where M_1 and M_2 are the gravity centers of the two masses (m_1 m_2), O being the zero resultant potential point. In the EVTD[2] entities theory, quantum gravitation require gravitational fields structured, intermittently, by quantum electromagnetic h irradiated by masses emitting surfaces, considered as nicks black bodies if their equivalent black body temperatures is known. The *bi receiver* reference surface used in [1-3], of *1* m^2 and normal to the axis of the centers of gravity, is located in *O,* the zero resulting potential. This receiver is supposed to measure the photonic flow arriving in O from each of the examined duos of bodies. In [1-3], all estimations of these calculated measures for the ten concerned bodies are given. By each sum of the flows in energy equivalence we have the photon energy by m^2 arriving in O per second, i.e. the energy that can be compacted per second, in the MBH in O. Accordingly, if it can properly estimate the equivalent reception surface, the MBH [m^2] where compact this energy, it can offer the global energy value of each studied MTN. More, with the relationship $E = mc^2$ [8] we shall have his correspondence in value mass/Kg. Then the question next arises: is there the possibility to match a fictitious mass which placed in O gives, by Newton, the same gravitational effects on the duo of considered celestial bodies? In a positive result, then, by its energy equivalence ($E = mc^2$) it will be, also in principle, the energy of the MBH from which we can deduct its volumetric dimensions. This will be determined by the equivalence method (mc^2 = Sum of received and compacted in O). It proofs so it is firstly necessary to determine the equivalent nine fictitious masses that would cause the same effects on the matching pairs, in being placed at the various MBH. We will detail the calculation for Earth-Moon and Sun-Mercury, other determination calculi for the other eight duos, will be similarly.

3. CALCULI TO DETERMINE THE MBH DIMENSIONS FOR EARTH-MOON DUO

The fictitious mass placed in O, following a thought experiment, is noted m_X and, it must give identical effects, while there is no more direct effects between the two masses: m_E and m_M in this case. With the zero resulting potential between Earth and Moon this mass m_X is also attracted to m_E and m_M and we can write, following the equal opposite gravity forces and, the following equalities with (m_X, g_X) virtual force mutual towards the Earth and the Moon after the relationship (3) :

$$m_X \cdot g_X = m_T \cdot g_T = m_L \cdot g_L = \frac{G \cdot m_T \cdot m_L}{d^2}; \quad (2)$$

$$g_T = \frac{G \cdot m_L}{d^2} \quad \text{and} \quad g_L = \frac{G \cdot m_T}{d^2};$$

$$m_X \cdot g_X = \frac{G \cdot m_X \cdot m_T}{(OT)^2} = \frac{G \cdot m_X \cdot m_L}{(OL)^2}. \quad (3)$$

From equalities (2) and (3) and:

$$\frac{G \cdot m_X \cdot m_T}{(OT)^2} = \frac{G \cdot m_T \cdot m_L}{d^2},$$

$$\frac{G \cdot m_X \cdot m_L}{(OL)^2} = \frac{G \cdot m_T \cdot m_L}{d^2},$$

wherefrom,

$$m_X \cdot g_X = \frac{G \cdot m_X \cdot m_T}{(OT)^2} = \frac{G \cdot m_X \cdot m_L}{(OL)^2};$$

$$m_X = m_L \left(\frac{OT}{d}\right)^2 \quad \text{and} \quad m_X = m_T \left(\frac{OL}{d}\right)^2.$$

Data are available to determine this m_X mass in the case of Earth-Moon. With the mass values: $m_E = 5.9736 \cdot 10^{24}$ *Kg,* $m_M = 7.348 \cdot 10^{24}$ *Kg,* the distances: *d= 384400 Km,* the value of the fictitious mass m_X is obtained: $m_X = 5.954046 \cdot 10^{22}$ Kg.

We transform this value of fictitious mass in his E_X by $E=mc^2$ energy equivalence and is found: $E_X = 535.1229677 \cdot 10^{37}$ J.

Also in [3] there are calculations of values into equivalence of flows arriving from Earth and Moon in O, where we found respectively the values in W/m^2 in the following ratio [3]:

$$E_{\substack{Sphere \\ EO/m^2}} / E_{\substack{Sphere \\ NO/m^2}} = \frac{5.5105}{6.766 \cdot 10^{-2}} = 81.43,$$

wherefrom:

$$\text{Flows sum in } O/m^2 = 5.5105 + 6.766 \cdot 10^{-2} = 5.57816 \text{ W/m}^2,$$

is the total equivalent flow per m^2 arriving in O from the two bodies. But the solar radiation is ubiquitous in this space and part of it will directly interfere with the part of the solar radiation reflected by the Earth's atmosphere to O. This has been detailed in [3] for an equivalent value of 5.3931 W/m^2 and so the overall flow that can interfere in O will be approximately of 10.92 W/m^2. This is almost double as previously mentioned. More, in [9] determinations of reciprocal levels for a differential of a quantum value h, from the Earth and the Moon, arriving in O, have the same value [9]:

$$d_{n_0-1} - d_{n_0} = r_{n_0-1} - r_{n_0} = 1.9900033373 \cdot 10^{-31} \text{ m}.$$

These lengths are collinear to the axis of the gravity centers of mass m_E and m_M. The compactions are in this preferred O area and well suited with the length of these levels quantified in h. So in an environment very close to the center O, levels should always have reciprocally very similar lengths and we can pretend that compactions are well made on both parts, on a very little distance around O. If it is estimated that the area where the compaction would actually be is around 5 m, on each side, that would give a MBH of 10 m thickness.

As we remembered the length of the h levels in this area, there are many "thin slices", where the quanta can be compacted in the thickness of 5 m, so they will be the number of:

$$N_{br} \text{ of levels} / 10m = \frac{10}{1.99000333 \cdot 10^{-31}} = 5.02511722 \cdot 10^{31}.$$

If we consider that each “slice” has the adequate number of m^2 so that the total sum according to the "slices" and the corresponding surface of the disc representing the MBH we find the same E_X equivalent energy to the fictitious mass m_X. Thus:

$$Disk\ surface\ MBH = \frac{535.1229677 \cdot 10^{37}}{10.92 \cdot 5.02511722 \cdot 10^{31}} = 9.75179933 \cdot 10^6 \text{ m}^2.$$

Thus, the determined radius of the MBH disc is:

$$r_{MTN} = \sqrt{9.75179933 \cdot 10^6 / \pi} = 1.7618 \text{ Km}.$$

4. DETERMINATIONS OF GEOMETRIC VALUES OF THE EIGHT MBH ABOUT EIGHT DUOS OF THE SUN WITH ITS EIGHT PLANETS

The essential data of the Sun-Mercury duo are mentioned in [1]. The distance inter-center d_1 of average gravity is $57.91 \cdot 10^9$ m, the two distances of these masses to their resulting potential zero O_1 are: SO_1 = 57886414945 m (Sun-O_1); and MeO_1 = 23585054 m (Mercury-O_1). The fictitious mass m_1, placed in O_1 results from the same kind of calculation as above:

$$m_1 = m_{Me}\left(\frac{MeO_1}{d_1}\right)^2 = m_S\left(\frac{SO_1}{d_1}\right)^2$$

$$m_1 = 1.9891 \cdot 10^{30}\left(\frac{23585054}{57.91 \cdot 10^9}\right)^2 = 3.302 \cdot 10^{23}\left(\frac{57886414945}{57.91 \cdot 10^9}\right)^2 = 3.2993108 \cdot 10^{23} \text{ Kg}$$

and thus,

$$E_1 = m_1 \cdot c^2 = 296.52726677 \cdot 10^{38} \text{ J}.$$

For determining the lengths of the respective and normally identical levels in O_1 the same form of calculation as in [9] is used and we get:

$$d_{n_0-1} - d_{n_0} = r_{n_0-1} - r_{n_0} = 1.67254105 \cdot 10^{-32} \text{ m}.$$

Following the determinations of flows coming into O_1 and, mentioned in Table 1 [1], the global sum is obtained:

$$\text{Flows sum in } O_1 \,/\, m^2 = 803433.432 \text{ W/m}^2.$$

The common length of photonic levels in O_1 is shorter here than in the case of Earth-Moon where the value of *5 m* it was taken for the thickness of the disc MBH. So, the estimation of the thickness must be diminished to *1.5 m* for the case of the Sun-Mercury MBH. In this case, the number of "slices" with thickness that comes to be determined will be:

$$N_{br} \text{ of levels} = \frac{2.4}{1.67254105 \cdot 10^{-32}} = \\ = 1.43494236 \cdot 10^{32}.$$

The corresponding surface of the disc representing the MBH can be calculated from equivalent energy E_1 to fictitious mass m_1:

$$\textit{Disk surface MBH} = \\ = \frac{296.52726677 \cdot 10^{38}}{80343.43 \cdot 1.43494236 \cdot 10^{32}} = 257.20 \text{ m}^2.$$

Thus, the Sun-Mercury MBH disk ray determined value is:

$$r_{MTN} = \sqrt{257.2 / \pi} = 9 \text{ m}..$$

Regarding estimates, which will be attributed to the thickness of the remaining duos MBH, it will take into account the differences in the lengths of the reciprocal levels in various corresponding *O*. So then, all similar calculations with data specific to each of these duos of the seven planets with the Sun listed in [2-3]. So all the main results are given in table 1, especially the MBH dimensions (in estimated shape of disc with ray and thickness). Regarding the MHB representative disks thicknesses, was chosen to calculate firstly the half-thickness, with certain criteria that take into account the entities composition in $EVTD^2$ of equal length reciprocal levels quantified in *h*. Indeed in a quantum space-time we must respect the dimensions of these $EVTD^2$ elements i.e., a level will consist of a whole number of entities $EVTD^2$. As the size of an $EVTD^2$ is globally of $0.808 \cdot 10^{35}$ *m* it is necessary, in calculi for the half-thickness, to respect the length of a level till its resolution determined at around 10^{-8} *m*. The obtained results for the dimensions of the different studied MBH are not all obviously in progressive correlations of a relative increase. This, according to the distance values in relation to the various calculated dimensions of quantum in *h* levels, for different areas *O* already calculated. But it is a further research in more refined knowledge of these MBH, if they exist. They would be then the physical "engine" of gravity between two masses effects.

Table 1.

Intermediate results and dimensions, calculated according to criteria, of MTN disks corresponding to different zero resulting potential areas of the various pairs of celestial bodies

Duos	Levels' length	Flows sum W/m^2	Virtual masses m_X kg	Energy MTN $E_X = m_X \cdot c^2$ J	Thickness MTN m	Rays MTN km
S – Me	$1.67254105 \cdot 10^{-32}$	803133.43	$3.29931 \cdot 10^{22}$	$296.52726 \cdot 10^{38}$	2.4	0.009
S – Ve	$5.826286 \cdot 10^{-32}$	85889	$4.853302 \cdot 10^{24}$	$436.19306 \cdot 10^{39}$	25	0.0614
S – T	$1.11319276 \cdot 10^{-31}$	41796.1	$5.9529496 \cdot 10^{24}$	$535.02443 \cdot 10^{39}$	13.5	0.1833
S – Ma	$2.590358493 \cdot 10^{-31}$	29961.57	$6.4112142 \cdot 10^{23}$	$57.62112 \cdot 10^{39}$	1.4	0.3365
S – Ju	$2.8458609418 \cdot 10^{-30}$	2.483217	$1.7865064.10^{27}$	$160.56319 \cdot 10^{42}$	17.2	1845.370
S – Sa	$9.734714435085 \cdot 10^{-30}$	1.9354158	$5.497167 \cdot 10^{26}$	$494.06073 \cdot 10^{41}$	10.8	2706.3
S – Ur	$4.0594498601 \cdot 10^{-29}$	0.47008	$8,5674285.10^{25}$	$770.00207 \cdot 10^{40}$	2	10287.35

S – Ne	$9.9789802541 \cdot 10^{-29}$	0.1913085	$1.0097558.10^{26}$	$907.52333 \cdot 10^{40}$	274	2345
T - Lu	$1.99000 \cdot 10^{-31}$	10.92	$5.954046.10^{22}$	$535.1229677 \cdot 10^{37}$	10	1.7618

5. CONCLUSION

The results obtained here and in the works [1-3] provide additional accreditation to the hypothesis of the existence of MBH "vacuums" in line with the observed attractive effects, but not fully explained, so far by current physics. These black holes should be positioned to zero resulting potential and this work has tried to determine the probable levels of the dimensions sizes for disk shapes that may have these MBH. Thus, MBH would be areas where, mainly, specific radiative energy disappear to be transformed into diffuse energy level (according to the energy state of the coherent substrate in EVTD^2). These MTN are acting somehow as "vacuums vortex" until the masses directly related to their photonic energy potential.

In this state of understanding can even extrapolate this situation within all agglomerates of condensed matter which would have enough solid symmetry. All like gravity that just was proposed, this last phenomenon is due to the electromagnetic waves emitted by all the atoms electrons and there would be possible their annihilations at the symmetry center of the mass, wherefrom a MBH.

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Calculul dimensiunilor mini găurilor negre prezente în potențialul rezultant zero în gravitație cuantică EVTD². Câmpurile fotonice radiate de temperaturile de echilibru corp negru ale maselor constituie câmpurile cuantice gravitaționale

Rezumat: Această lucrare constituie urmarea în această revistă a lucrărilor [1-3]. În lucrare sunt propuse continuări și adăugiri ale supozițiilor din [4-5] în gravitația cuantică EVTD² [6-7], privitoare la energia potențială cuantică fotonică. Noțiunile de găuri negre, poziționate la nivelul potențialului rezultant zero (*O*) a al acestor perechi de corpuri, sunt folosite datorită proprietăților sale energetice pentru a determina dimensiunile lor volumetrice. Aceste mini găuri negre (*MBH*) ar fi de o formă estimată de discuri de grosime mică plasate pe axa centrelor de gravitate. Studiul diverselor *MBH* este relativ la cele opt perechi Soare și respectiv planetele sistemului solar [1-2] ca și perechea Pământ-Lună [3]. Energiile fotonice echivalente, studiate în cadrul noilor ipoteze ale fizicii EVTD², sunt compactate în *MBH* și pot fi corelate cu masele echivalente (prin $E=mc^2$ [8]) fictiv plasate în potențialele rezultante zero provocând aceleași accelerații. Dimensiunile calculate și aproximate par a fi natural conforme.

Ileana ROŞCA, Ph.D., Professor, Transylvania University, Design Product, Mechatronics and Environment Department, ilcrosca@unitbv.ro , Phone: 0040 744317171, 18/A/10, Bd. Gării, Braşov, Romania,

Michel CONTE, Ph.D., Honorary Professor of Transylvania University of Brasov, michelconte13104@gmail.com .