Dark matter and visible matter fundamentally related in new cosmological model and recalculated.

Novum for cosmology, astro-physics and dark matter-projects.

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Abstract.

A new surface energy-value for dark matter is calculated, derivated from a perspective of a "higher order universe". A universe of dark energy, dark- and visible matter, and a dark energy force. A fundamental connection between dark matter and visible matter is related to dark energy (viXra-paper 1010.0014 in particular is the reference for this novum [5]. The surface energy-density of dark matter seems to be a factor 5 to 20 times higher than earlier predicted value-ranges by the CDMS-project and the Fermi-satelite. Also the produced energies through particle-collissions by LHC CERN will not be enough to achieve the dark matter surface energy-value. The "fact" some of these projects have announced some vaque "bliebs" might be due to a new phenomenon in the search of dark matter. It could be caused by "three dimensional time", which is embedded as a "new duality" in the new model, the "Twin-Tori cosmological Model (TTM)"[1,2,3,4]. The "three dimensional time" might cause dark matter taking unknown paths before detection. This paper has calculated the surface energy-density value for dark matter on 1 TeV in a surface of 6.4 x 10^{-48} [m^2].

1. Introduction.

The introduction directly refers to viXra-paper 1010.0014[5], which is one in a series of papers referring to a "double torus universe" of "dark energy and dark matter", which exists of one "torus of dark energy" enclosing and intertwining a "dark matter torus". Inside this new cosmological manifestation a "dark energy force" empowers the "inner" located "dark matter torus". The visible world is located in that "dark matter torus"[1,2,3,4]. In particular the reference paper[5] introduces the "first-derivative of dark energy", which turns out to be a key-expression to understand mathematically a "higher order universe" generating the physics of the lower big bang universe with conventional black holes. The postulate reveals a fundamental connection between dark matter- and visible matter. Both are representing respectively the area not visible behind the event-horizon and the area between the event- and light-horizon[5]. The equations show a photon to be existing of two dark matter-particles.

In this paper I introduce a method to calculate a value for the surface-energy of dark matter, which is in contradiction with values predicted by CDMS-experiments (searching for wimps) which predicts particle-interaction for a (stand-alone) dark matter-particle in the range of ≈ 42 [GeV/c^2] to 60 [GeV/c^2] in a cross-section of 6.6 x10^{-44}

[cm^2]. While the Fermi-satelite also predicts a stand-alone dark matter-value in the range of ≈ 50 [GeV/c^2] to 200 [GeV/c^2].

Contrarily this paper performs a calculation, combining the postulate with a formula derived by the CERN-safety-group, who used their specific formula for the prediction whether mini-black holes could be formed or not. Despite their theoretical conclusions, that mini-black holes are not likely to be formed during particle-collissions with the available energies, even based on the existence of more dimensional space-input, the calculation made here, uses “one space-dimension less” and “three time-dimensions” substituted in the CERN-formula. This is according a “new duality” in the Twin Tori Model. I explain why this substitution is allowed and how it performs a new result for dark matter.

2. The new calculation of dark matter-energy is correlated to the 1-st derivative of the dark energy force described in the TTM.

Part-1

The calculation starts with the reference to viXra-paper[5], where the “mass-difference” is expressed as: (1)

$$\Delta m = m_{vm} - m_{dm} = \left(\frac{1}{c} - \frac{1}{2c}\right)[kg] = \left(\frac{1}{c} - \frac{1}{2c}\right) \cdot A\left[eV / c^2\right]$$

From this expression (1) follows dark matter (m_{dm}) is equal to the “mass-difference” (m_{vm}-m_{dm}) , with a mass-value 1/2c [kg]. In other words: Visible matter seems to exist of two dark matter masses.
The factor A = 5.609 588 8 × 10^{35} is used to transfer the dark matter mass to [eV/c^2]. For the light speed is used c = 2.99 792 458 .10^8 [m/s]. Following:

$$E_{\Delta m} = \Delta m.c^2 = c^2.\left(\frac{1}{c} - \frac{1}{2c}\right) \cdot A\left[eV / c^2\right]$$

$$E_{\Delta m} = \left(\frac{1}{2c}\right) \cdot A\left[eV\right]$$

The squared energy-value is:

$$\left(E_{\Delta m}\right)^2 = 0.875307616.10^{42}[TeV] \qquad (2)$$

The energy-value from expression (2) would be used to compare with a calculation for the forming of mini-black holes by the formula performed by the LHC-safety-group, where also the “squared” Planck-energy is used for the collission of two protons .

Part-2

The calculation continues with a formula derived by the CERN-LHC-safety-group, who used their formula to predict whether mini-black holes could be formed or not.

Their paper used the possible existence of extra space-dimensions in order to determine theoretically the possibility of mini-black holes to be formed with the energy produced by the collissions of the LHC.

Contrarily, this paper here, uses one space-dimension less and three reversibly operating time-dimensions for the substitution in their formula in order to express dark energy and dark matter beneath the area $\Delta E \times \Delta t \geq h / 4\pi$, which is the energy-time limit for conventional quantumphysics.

The formula of the LHC-safety study-group.

In the report of the LHC-safety study-group, titled 'Study of potentially dangerous events during heavy-ion collisions at LHC [6], written in 2003, the authors describe the boundaries of possibilities to produce black holes in the Large Hydron Collider at CERN. However, there is a lack of understanding about what dark energy and dark matter might be. Both have undoubtedly an effect on quantumgravity. But for quantumgravity still new existing theories have to be proved first. Many experiments have shown that extra dimensions are possible up to milimeter-scale. But what exactly the role of dark energy and dark matter is at quantum scale, is not known sufficiently. The example-calculations, given in the report of the LHC-safety study-group, about growing black holes, are based on existing current physic- predictions of the stringtheory, to much excluding other points of view. Contrarily, in this paper I apply the properties found in the reference-papers of the TTM [1,2,3,4,5] .

The LHC proclaims, that 10^{32} TeV energy is needed to create growing black holes (two protons with $\approx 10^{19} . 10^{19}$ GeV, or $\approx 10^{16} . 10^{16}$ TeV $\approx 10^{32}$ TeV; the squared energy). But such an energy-production is not possible with the current accelerators, the LHC safety-group wrote. If extra space-dimensions exist, as is predicted by the stringtheory, than 10^{21} TeV energy is needed for 2 extra small space-dimensions. Nevertheless, this possibility to create black holes is already excluded by other experiments. Even at that lower energy-boundary the accelerator is not able to produce such a high energy. So, the group is convinced that blackholes can not occur in LHC.

For the better understanding, I go into details here: I quote from the introduction of chapter 3 in their paper, titled as: 'Gravitational effects'.

Quote: -- "The RHIC report includes a discussion of whether heavy-ion collisions can assemble a suficient concentration of matter to produce a black hole or other macroscopic object capable of growing due to classical gravitational forces. The authors conclude that such gravitational effects are totally negligible, being suppressed by inverse powers of the Planck mass M_p. Recently there have been suggestions that the Planck mass is not a fundamental quantity but is derived from an underlying theory with more than four space-time dimensions. In such theories the higher dimensional Planck mass may be much smaller, raising the question of whether gravitational instabilities may develop much more readily. Given this we have re-examined the question whether *the conditions will be such at the LHC as to produce stable black holes capable of accreting matter." -- End quote.*

In their report the authors derived a formula (their formula-number 22) for the mass of a black hole. The formula is expressed as $M > 10^3 . 10^{7(1+d)}$ GeV, in which *d* are extra space-dimensions. If the mass M is larger than the expression, than a black hole is theoretical able to grow. Their conclusions are:

Quote: --"Even for the case d = 2 (already disfavoured by experiment), the bound M > 10^{24} GeV = 10^{21} TeV, which corresponds to 10^{21} nucleons of 1 TeV, is clearly beyond any accelerator. (...The accelerators limit is 2 x7 TeV =14 TeV for proton-proton collisions and 1150 TeV for Pb-Pb collisions.....). Thus we conclude that black hole production does not present a conceivable risk at the LHC due to the rapid decay of the black hole through thermal processes." -- End quote.

The approach with different dimensions in perspective of a double torus universe (TTM).

In order to check the forming of mini-black holes from the perspective of the TTM, an application is performed with one less space-dimension and three time-dimensions. These time-dimensions operate reversibly, because their location is beneath an area where $\Delta E \times \Delta t = \geq h / 4\pi$ is not valid. This energy-time limit is a physics-law, which is not allowed to apply beneath the conventional quamtumphysics. In an area beneath the Planckscale evaporation of a Planck hole has become extremely uncertain, because of the huge gaps in their quantumgravity. It could be reasonably assumed that a Planck hole will not evaporate or attract matter anymore, and a new perspective on dark matter is necessary to correlate to reality. That is precisely what the viXra-paper 1010.0014[5] theoretically announces as evidence, by taken by the 1-ste derivative of the dark energy force in a "higher order universe". Then a dark matter particle, as a residu-Planckhole-particle, is entering reality according to the postulate and within the framework of the TTM. Therefore, the extra dimensions *d* in the LHC-group formula, will be splitted in a combination of one less extra space-dimension d_s and three time-dimensions $-d_t$ .This is substituted as *d'* in LHC study group-formula, as follows:

$d' = d_s + d_t = 2 - 3 = -1$

Substitution in the formula of the LHC-safety group gives:

$M > 10^3 . 10^{7(1+d)}$ GeV

$M > 10^3 . 10^{7(1+d')}$ GeV

$M > 10^3 . 10^{7(1-1)}$ GeV

$M > 10^3 . 10^{7.(0)}$ GeV

$M > 10^3 . 10^0$ GeV

$M > 10^3 \cdot 1$ GeV

M >1 TeV. (3)

This energy is within the limit of the acelerator of 14 TeV. However, the conlusions has to be interpreted completely different from a new perspective.

3. Interpretation.

From part 1 and part 2 follows:

First: The energy of a dark matter-particle (0.875307616 $.10^{42}$ TeV), as calculated in expression (2), according the postulate, is a logical representation for the energy behind the event-horizon of a black hole, because the postulate is a derivative of the TTM.

The special dimensional input in the formula of the LHC-study-group is also a logical representation of energy behind the event-horizon of a black hole, because it is extracted from the TTM also. So, both energy-values are located within the framework of the TTM. In other words: The first one is originated from a "higher order universe" and transformed by the 1-ste derivative of dark energy force to a "black hole" in a "lower order universe": the big bang. The second one is calculated by using the CERN-formula through a specific dimensional input belonging to the TTM with its dark enegy force.

As a result an applied "combination-calculation" forms a performence beneath the "energy-time-limit" $\Delta E \times \Delta t = \geq h / 4\pi$, which is an "energy-time-limit" belonging to the conventional quantum physics. This urges to introduce a "new surface" for ΔE^2 (mentioned in part 1) beneath the "elementary surface-quantum" (O_e).

4. Combination-calculation.

I define a "new surface" of a specific area beneath the quantum-physics as O_{ns} . This definition enables to calculate the energy-density for the "combination-calculation". It is related to adapt the "product-energy" of two colliding proton-proton particles, which melt together to form a supposed mini black hole ($E^2{}_p \approx 10^{32}$ TeV). Than a "combination-calculation" could be performed with the squared energies being a product in their correlating surfaces, as follows:

$$\Delta E^2.O_{ns} = E^2{}_p.O_e$$

$$O_{ns} = \frac{E^2{}_p}{\Delta E^2}.O_e \qquad (4)$$

$E^2{}_p$ is the squared Planck-energy.
ΔE^2 is the squared energy of dark matter.
O_e is the elementary surface-quantum.
O_{ns} is a "new surface" which is correlated to squared Planck-energy.

From this follows the calculation of O_{ns} :

$$O_{ns} = \frac{1.4884x10^{32} x2.612235617x10^{-70}}{0.875307616x10^{42}} \left[m^2\right]$$

$$O_{ns} = 4.441925811x10^{-80} \left[m^2\right] \quad (5)$$

Additional explanation:

Expression (4) and (5) can be explained additional, as follows: The energy-density of a black hole is constant c^2/G [kg/m] and the entropy, determined by the amount of O_e at the event-horizon, is getting smaller during evaporation of a black hole. This could be expressed in an equivalent approach: Take a smaller O_{ns} with a larger surface energy-density, so it also decreases the entropy by preventing the energy from escaping the event-horizon.

Expression (3) shows the squared Planck-energy, affective in LHC experiments, to decrease from 1.4484 x 10^{32} TeV to 1 TeV. Proportionally a “new surface” O_{ns} has to enlarge with that same factor 1.4484 x 10^{32}. From this follows the energy of dark matter:

1 TeV in
4.441925811 x 10^{-80} x 1.4484 x 10^{32} =
6.433685345 x 10^{-48} m^2

5. Conclusions.

A. Dark matter energy is 1 TeV in a surface of 6.4 x 10^{-48} [m^2].
(surface energy-density)

B. As mentioned in the introduction the current predicted dark matter values (wimps) by the CDMS project is ≈ 42 [GeV/c^2] to 60 [GeV/c^2] in 6.6 x 10^{-48} [m^2] = 6.6 x10^{-44} [cm^2], a value used in the CDMS-reports for stand-alone dark matter particles.
Contrarily, the Fermi-satelite predicts stand-alone dark matter-values in range of ≈ 50 [GeV/c^2] to 200 [GeV/c^2]. **The 1 TeV = 1000 GeV is about a factor 5 to 20 times higher.**

C. The energy-density of 1 TeV in a surface of 6.4 x 10^{-48} [m^2] means an equivalent surface energy-density of 10^8 TeV in a surface of 6.4 x 10^{-40} [m^2]. The energies produced by the LHC are 14 TeV and 1150 TeV and thus insufficient to reach an energy of 10^8 TeV.

Main-conclusion:

The points (A), (B) and (C) show the energy-density of 1 TeV in 6.4 x 10^{-48} [m^2] is:

1) beyond the current predictions of any dark matter-project at present.
2) beyond the 2 x 7 TeV = 14 TeV energy-production of proton-proton LHC-collissions.
3) beyond the energy-production of LHC-Pb-Pb collissions of 1150 TeV.

Remark :

The "three time-dimensions" (combined with one less space-dimensions), which is according a "new duality" in the TTM, might cause a mini-black hole to disappear in unexpected directions. This means dark matter could escape the detectors. The desintegration of a mini-black hole also could be different from an assumed conventional point of view, which considers conventional extra space-dimensions. What remains is the relevance of the "three time-dimensions" in affecting the dark matter. It is uncertain if particle-collissions could cause dark matter to harm humans and damage installation-parts? (I suggest to call this: "possible damage by "time-hits").

6. References.

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