The Theory of Something Summed Up

Coming out of the blue – not from within the scientific community of this field – and claiming to answer (almost) everything in the universe, the Theory of Something (ToS) risk being considered "crackpot": *"It cannot be possible!", "If the solution is just One elementary particle, One force – the electromagnetic, just Three room dimensions and Time - Why did not Einstein find such a simple and beautiful unified field theory during his last 35 years and why have not the thousands of researchers within quantum mechanics, standard model, string theory and loop quantum gravity found this solution during the last 100 years of research?", "The ToS claims to answer things we were supposed to find out during the centuries to come!" etc..*

But the ToS must be a correct description of our reality – So much matches up! The key was not just a single smaller fundamental particle (that has surely been considered before), but these six key points:

1. Space is filled with a **Grid** of the elementary charge particle (compare Higgs field, branes, LQG field, structured vacuum, and the old aether). Our universe has only negative charge particles (a hole-mechanism makes particles with positive charge). There is no emptiness – no "Nothing".
2. When clumped together, the same elementary charge particle (called **negtrino** in the ToS) makes up all other particles and matter.
3. Mass and everything above are mechanisms – Mass is not a quality of particles. Einstein taught that the mechanism of gravity was that space-time curves around matter. ToS teaches how mass itself is generated by a mechanism – kg is not a base unit, it is As^2/m^3!
4. The four fundamental forces, the strong, the weak, the electromagnetic and gravity, all emanate from a single force - the electromagnetic (a slightly modified generalized equation is proposed). "Force carrying particles" of the Standard Model is a confusing description – The ToS description is simply the known general equation of force between moving point charges.
5. The photon is a wave in the form of the energy of a rotating negtrino in the Grid (which makes it quantified). Particles are particles - NOT waves - but when moving in the medium of the Grid, particles make waves (which explain the double slit and other experiments). Waves in themselves are not particles.
6. The universe was NOT created at the Big Bang – Space, time and the laws of physics already existed and still exist. The Big Bang "only seeded" our active universe, by injecting the dark energy which today just is a 10^{100} portion of the balanced positive and negative energy in the Grid itself.

As a consequence we end up with an understandable university model WITHOUT:

- fundamental physical constants and parameters that has to be fine-tuned to make anything exist.
- new laws of physics suddenly appearing – There is no "symmetry breaking".
- the whole universe coming out of something smaller than an atom at the Big Bang. The Big Bang was something else! Energy cannot be created!
- extra dimensions (10 to 26 in string theories). The ToS is fine with 3 room dimensions and time.
- a force for each purpose – there are 4 forces in the Standard Model (that may become 5 with the discovered acceleration of distant galaxies). One force is sufficient in the ToS and that force is described by one equation.
- new mysterious requirements, like inflation and super-symmetry, to save models with open basic questions.

When starting the ToS work nine months ago, I had no idea, it could lead to a quite complete description of everything from the very elementary force and particle to the creation and cycling of universes, that it could be supported by simple math and be as clean and beautiful as it turned out. And I could not imagine that it would be possible to understand and visualize the details of the fundamentals – but it actually is!

Reality does no longer have to be hidden behind abstract mathematics. The ToS allows us to understand:

- Why the negative electron does not fall into the positive atom nucleus
- How particles are composed
- The nature and mechanism of mass and gravity
- What a photon actually is
- Why space-time curves and the speed of light is measured to be constant in relation to everything
- What Planck's constant is
- What a black hole is
- What dark matter can be
- Where the antimatter is
- The Big Bang and the possible origin of our universe
- What makes up space itself
- Why F=ma, what energy is and the origin of our laws of physics

This document is a summary – the full ToS document is 110 pages (even though that is short considering the scope covered) and is available at http://theoryofsomething.com.

In the actual summary in this document – section 2 – I have tried to replace text and detailed descriptions with figures and tables, to make it easy and quick to grasp and get the overall picture. For those who want to go into the background and full description, I make references into the ToS, e.g. (ToS 8.2.2) explaining how the single elementary charge particle itself comes out the equation of everything, the generalized equation for force between moving point charges.

The ToS may seem very radical and turning everything upside down, but the required basics, the problems and many clues have been around for long:

- Lawrence Krauss book "A Universe From Nothing" points out: Nothing is unstable (ToS 8.2.1); The energy in the universe is and must be zero - mass and gravity energy equals out (ToS 7.2.3); There is a mismatch of 10^{100} or 10^{120} between the high vacuum energy and the dark energy found (ToS 5.1).
- An aether (the Grid in the ToS) – something that permeates all of space and can be interacted with – is now back in all theories (the Higgs field, branes in string theory, the LQG field and structured vacuum descriptions).
- Dirac's hole theory and sea of electrons in 1928, is close to the ToS hole mechanism and the Grid
- String theory requires six extra dimensions to make the universe work. The ToS has the magic cubic Grid structure, where the six directions a negtrino can be in are essential (ToS 3.1).
- Cyclic universe models point out that the energy of the universe is borrowed, rather than created (ToS 7).

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1 Before Summing Up the ToS: What Are the Fundamentals?

The full ToS document starts from the elementary particle and ends up with universes and the Creation at the last page (ToS 9). The proposed Equation[1] of Everything at the end of the ToS, is the fundamental physical law that always has existed, applies everywhere and rules everything (ToS 8.2).

$$\bar{E} = \frac{Q_1}{4\pi\varepsilon_0 (r - \frac{\bar{r}\cdot\bar{v}}{c})^3} \left\{ (\bar{r} - \frac{r\bar{v}}{c})(1 - \frac{v^2}{c_0^2}) + \frac{1}{c_0^2}\, \bar{r} \times [(\bar{r} - \frac{r\bar{v}}{c}) \times \frac{d\bar{v}}{dt}] \right\}$$

$$\bar{B} = \frac{\bar{r} \times \bar{E}}{r c_0}$$

$$\bar{F} = Q_2 (\bar{E} + \bar{v} \times \bar{B})$$

This equation describes the force between moving point charges and should be combined with that forces can be added (superposition). At this fundamental level, there is only time, three room dimensions and charge. Everything else, including gravity, mass, matter and energy, are results of mechanisms involving the three fundamental qualities, length (m, meters), time (s, seconds) and charge (C or As, coulombs or ampere-seconds).

This fundamental equation is believed to even describe the elementary particle itself – the negtrino and its antiparticle the postrino – being created out of "Nothing" and filling up space! Nothing is unstable – there must be "Something", which is the Grid of negtrinos! Clumping of this fundamental particle makes up larger (composed) particles, atoms and everything.

The consequence of such fundamental law of physics is that "the elementary particle is analog", curled up of electricity, resulting in its charge, magnetic moment (rotating charge) and size (ToS 8.2.2).

However, the ToS does not have to describe an analog origin of "Everything" – The equation is not yet proved (better mathematicians should be able to do it though).

Within the ToS, the origin of Everything can alternatively be the negtrino and postrino pair, being created out of nothing as "quantum particles" with their fixed charge of 5.3406×10^{-20} As (1/3 e), fixed magnetic moment of 1.7795×10^{-20} Am^2 (1930 Bohr magneton) and a size around 0.5×10^{-15} m.

In either alternative, the elementary charge particle is only stable in the Grid (when spaced $d_n = 1.0150 \times 10^{-11}$ m (10.15 pm) apart and without energy) or as part of the core in a composed particle.

The universe, or rather all universes together, are without energy – Energy cannot be created, just relocated! The dark energy we have found in our universe is the only net energy in our universe and it is "borrowed" from another universe.

In the ToS, the laws of physics (all emanating from the equation above) have always existed, remain forever and applies everywhere. There is no "symmetry breaking" creating new laws of physics now and then or when required.

[1] This is an old equation containing the entire theory of classical electromagnetism – I only added the three red circles - the proposed generalization making c_0 the constant speed of light we know and c is the variable speed of light (converging to c_0). Also note that the E- and B-fields can be eliminated, writing it as a single general equation for force between charges.

Further, the ToS requires NO fine-tuning[2] of fundamental constants to bring something into existence. The only fundamental constants in the ToS: The speed of light c_0=2.9979x10^8 m/s, permittivity ε_0=8.8542x10^{-12} As^2 [3] and the electron or negtrino charge above, just have the shown values because of the size of the units we have selected for length (m, meters), time (s, seconds) and current (A, ampere – where charge is As)!

1.1 Can the General ToS Description of Reality be Proved?

- *It is Already Experimentally Proved!*

Even though the ToS document do not use the math of quantum mechanics to describe reality (classic electromagnetic theory works better once we know what to describe), there are numerous quantum mechanical experiments (from black body radiation, the photoelectric effect, the energy levels of atoms, etc.) verifying the that there is "energy quanta in space" represented by Planck's (reduced) constant $\hbar$=1.0545x10^{-34} Js, indicating energy per revolution (As we know, the energy of a photon is Planck's constant times the frequency of the light).

Nowadays, from Einstein's general relativity theory and the WMAP spacecraft[4], we also know the dark energy density in space: U_{de} =6.083x10^{-10} J/m^3. U_{de} is the 72.8% missing part of the critical density (9.30×10^{-27} kg/m^3)[5] needed to make up a flat universe (U_{de} =72.8% x critical density x c^2).

The basis of the ToS is the Grid of negtrinos spaced 10.15 pm apart, having a slight over-pressure representing the dark energy. The dark energy split up on each negtrino and revolution would be Plank's constant (see e.g. ToS 3.1.3, where the photon is the energy of a rotating negtrino in the Grid).

Do the numbers match up? How much is then the dark energy per negtrino and revolution (ToS 6.1)? Interpreting permittivity ε_0 as charge per revolution and putting in the values from above, we get:

$$\frac{U_{de} d_n^3 \varepsilon_0}{Q_n} = \frac{6.083\text{x}10^{-10}(1.0150\text{x}10^{-11})^3\ 8.8542\text{x}10^{-12}}{5.3406\text{x}10^{-20}} = 1.0545\text{x}10^{-34}$$ Js which is Plank's (reduced) constant!

To my knowledge, this relation has not been observed or discussed before.

(1) A number like 1.0545x10^{-34} does not show up by accident. That is proof of the ToS!

(2) The units of dimensions Js – only come out right if ε_0 is measured in As^2. If measured as before ToS, in s^{4}A^2/(m^{3}kg), the units of dimensions comes out totally wrong. kg must be replaced by As^2/m^3! **This shows that kg is not a base unit and proves that mass is not a fundamental quality of particles, but must be a mechanism.**

(3) From the parameters above, it easy to calculate the positive electrostatic energy (repelling forces) balanced by the negative magnetic energy (attracting forces). That **energy level is 10^{100} times higher than the dark energy** (ToS 5.2 and 5.1). That **explains what is considered a huge mismatch in calculations of vacuum energy** in other theories, giving 10^{100} or 10^{120} larger value than the critical density energy.

[2] Other theories require that their fundamental constants and parameters have certain specific values for our reality to exist. With slightly different values, there would be no matter and no universe. For those theories, it is a serious problem to explain what caused the fine-tuning for anything to exist.

[3] Before ToS, permittivity ε_0 was measured in F/m or s^{4}A^2/(m^{3}kg). With ToS, where mass is a mechanism and kg= As^2/m^3, permittivity ε_0 is measured in As^2, i.e. charge per revolution.

[4] http://en.wikipedia.org/wiki/Dark_energy The 72.8% dark energy portion is from the WMAP seven-year analysis

[5] http://en.wikipedia.org/wiki/Observable_universe

2 The Basics and Support of the Theory of Something

After the somewhat lengthy introduction above, pinpointing the key points and strongest evidence of the ToS, a summary of the ToS model follows below. The ToS document itself (ToS 2.X.X), includes an introduction of 10 pages for those wanting a deeper start, as a step towards the full 110 page document.

After each section, I list the additional support and proofs of the ToS, in addition to the already shown under section 1.1.

2.1 Room, Time, Electricity and the Laws of Physics

There are 3 room dimensions and time, just as we know them. Extra dimensions are not needed in the ToS. There is just one nature of force, the electromagnetic. Gravity and mass are mechanisms, not qualities of any particle.

Classic electromagnetic theory rules (Maxwell's equations), but need generalization for deviations in the negtrino density in the Grid (the source of gravity and the over-pressure from the Big Bang). Classic electromagnetic theory was already "Lorentz invariant and relativistic" when completed 150 years ago.

2.2 The Charge Particle – The Negtrino

There is one fundamental elementary particle, the basic charge particle, here named the "negtrino" and its antiparticle named "postrino".

Negtrinos build up both the Grid that fills all of space and all larger particles.

There are only negative charge particles (negtrinos) in our universe. The postrinos, which make up antimatter, are in other universes and in the black holes of our universe.

The negtrino has 1/3 of the electron charge (5.3406×10^{-20} As), a magnetic moment 1930 times stronger than the electron (1.7795×10^{-20} Am^2) and a size around 0.5×10^{-15} m.

Its size is estimated to 0.5 fm (5×10^{-16} m) from the density of nuclei (atom cores), where the negtrinos are "in contact with each other".

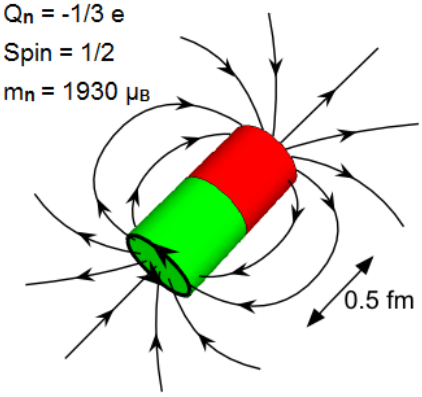

Figure 1: The basic charge particle, the negtrino, is modeled as a cylinder of rotating charge. Its charge is 1/3 of the electron charge and it has a very strong magnetic moment due to its rotating charge.

2.2.1 Support

(ToS 4.1) 1/3 e is the smallest charge observed (in quarks).

(ToS 3.1.1) Using the negtrino distance of 10 pm (e.g. from the size of atoms or 1.1 above), the Grid configuration of Figure 3, the magnetic moment is calculated to 1930 Bohr magnetons using classic electromagnetic theory.

(ToS 3.1.2) Calculating the magnetic B-field in the Grid (a very strong $B_n = 5.077 \times 10^{+5}$ T) the magnetic potential energy of the negtrino becomes 57 keV which corresponds to 1/9 of the electron's rest mass. (It will later be shown that this is because the electron engages 9 negtrinos in the Grid, to achieve its mass.).

(ToS 8.2.2) Classic electromagnetic theory gives the negtrino a length of 0.5 fm (corresponding the size required for contact in atom nucleus) if modeled as a single layer solenoid coil with its 1/3 e charge rotating at speed of light, giving the magnetic energy corresponding to 1/9 of the electron rest mass (as mentioned above).

If the negtrino itself is described by the equation in section 1 above – which is derived from Maxwell's equations – it should be possible to computer simulate the negtrino particle, finding out its physical details, by using a finite-difference time-domain (FDTD) simulation software like the Meep developed at MIT (ToS 8.2.2).

2.3 The Grid of Charge Particles Filling the Universe

Space is filled with the elementary charge particles at 10.15 pm distance arranged in a cubic grid, the Grid.

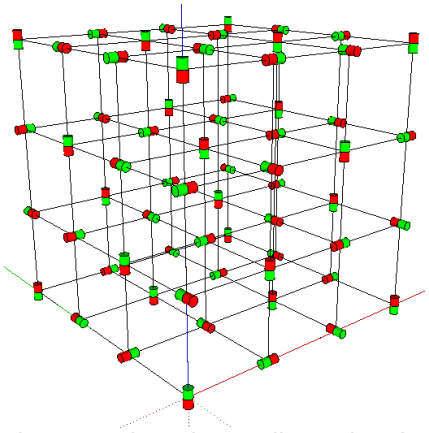

Figure 2: There is a 3-dimensional cubic Grid of negtrinos filling the universe.

Negtrinos and postrinos are in separate universes separated by a "potential horizon". There is no emptiness, no "real vacuum" – if it was, pairs of a negtrino and a postrino would be created out of nothing and sorted into positive and negative universes. A particle of opposite charge in one universe is an antiparticle and annihilated as part of the sorting process. (The hole-mechanism creating positive particles, visual and actual charge will be explained later.)

The individual direction of each negtrino in the Grid is important to balance the repelling electrostatic forces against the magnetic attracting forces. The overall energy is zero and there is no rest mass in a balanced Grid.

The common Grid configuration is shown in Figure 3. The Grid is held together by each negtrino magnetically attracting other negtrinos three negtrino distances away. Such negtrino pairs also form magnetic bottles for other negtrinos that stabilizes the Grid.

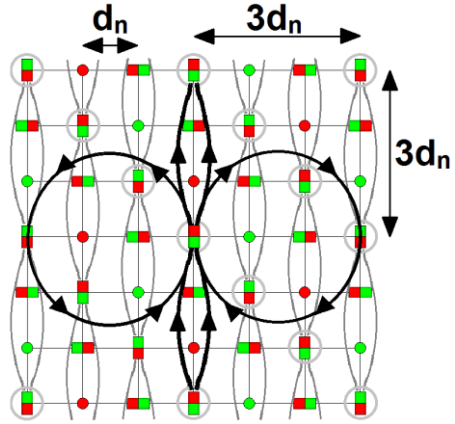

Figure 3: In the assumed Grid configuration, each negtrino is being magnetically attracted by two other negtrinos in the length direction and four negtrinos in the side-direction. These six attracting forces, being three negtrino distances away, are balancing the electrostatic repelling force around each negtrino.

This structure is repeated for most negtrinos in the Grid.

There are extreme forces in the Grid (ToS 3.1.5): The repelling forces per square mm are in the order of 2 x10^9 Newton and the magnetic field acting on each negtrino is 500,000 Tesla - more than 10,000 times stronger than the best superconducting magnets humans have made! Yet we don't feel the Grid…

There is no Grid configuration that can be fully symmetrically repeated. Instead the Grid can be seen as consisting of slightly curved building blocks of negtrinos in a cubic arrangement. Curved building blocks can form the spherical layers around atoms in the mass generating mechanism (explained later). Such building blocks are also believed to randomize the larger scale alignment of the Grid, so e.g. the speed of light does not vary with the direction in the Grid.

2.3.1 Support

(ToS 4.5.1) With the ToS atom model (the electrons simply resting in a potential well around the negatively charged nucleus), 10 pm negtrino distance, an electric potential calculation (without using Planck's constant) results in a good estimate of the energy level and the Bohr radius for the hydrogen atom.

(ToS 6.1) The accurate negtrino distance of 10.1498 pm in the Grid can be derived from Planck's constant and the dark energy density (1.1 above) – All quantum mechanical positive experiment results rely on Planck's constant.

(ToS 4.5.6) Based on the negtrino content of the electron (9), proton (63) and neutron (69), as well as the negtrino distance in the Grid, the maximum density of atomic matter is calculated and shows that the densest chemical substance, osmium with a density of 22,590 kg/m3 is at 99.7% of its theoretical maximum, closely followed by iridium at 99.6% (Table 5 in 4.5.2 of the ToS). For those substances there is almost no Grid between the atoms. (No atomic substance can go beyond 100%.)

(ToS 3.1.1) The electromagnetic calculations show that repelling electrostatic forces balances the attracting magnetic forces at a negtrino distance of 10 pm and the assumed Grid configuration of Figure 3. That gives a Grid with zero overall energy.

(ToS 3.1.2) The calculated magnetic energy of each negtrino in the Grid, W_n=57 keV, corresponds to 1/9 of the electron's rest mass. This is because the electron engages 9 negtrinos in the Grid, to achieve its mass (shown later).

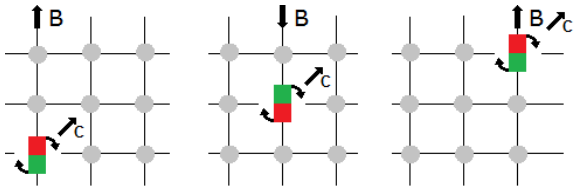

Figure 4: The photon is the energy of a negtrino rotating orthogonally to its spin. A full wavelength is transferring the rotation at speed of light, c, via two negtrinos.

(ToS 3.1.3) The photon being the energy packet E=hf carried by a rotating negtrino as shown in Figure 4, the average traveled distance can be calculated as $hc/(2W_n)$ = 11 pm (h is Planck's constant), which is reasonably larger than the straight negtrino distance between negtrinos.

(ToS 3.1.3) The polarization of light is explained by the rotating negtrino carrying the energy quanta that is the photon, as shown in Figure 5 and Figure 6.

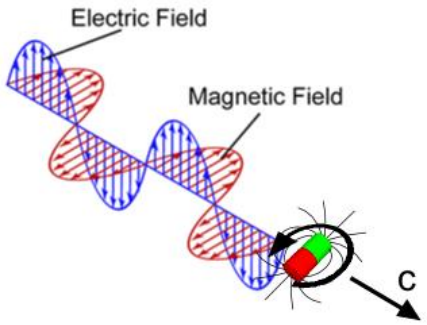

Figure 5: The photon as the energy of a rotating negtrino moving at light speed, creating an electromagnetic wave.

A rotating negtrino is believed to be unstable and therefore must dispose of its rotation. Doing that to another negtrino stops the photon from resting and enforces the photon to always move at the speed of light.

The energy quanta of a negtrino rotating orthogonal to its spin, explains the photon's particle behavior, even though it is a wave. The photon double slit experiment and other experiments are no longer a mystery. A wave can be quantified, without being a particle (by being carried by particles)!

(ToS 3.4) The Grid and its configuration allows for a mechanism to explain the spooky quantum entanglement. The proposed mechanism can transfer quantum state information immediate – faster than light – and work over long distances, without violating the laws of physics (electromagnetism).

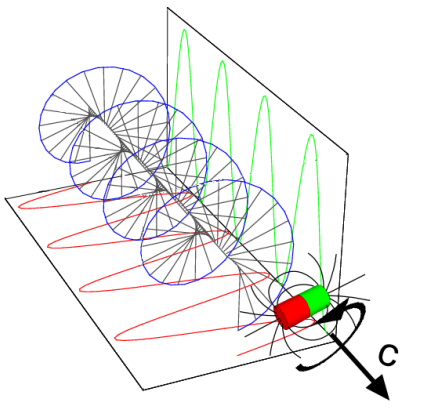

Figure 6: Rotating this way, the negtrino's rotating energy generates a circular polarized wave.

(ToS 4.2.3) Only negative particles in our universe, resolves the problem of requiring exactly the same amount of electrons and protons in a universe.

(ToS general) Negtrinos and postrinos in separate universes explain where the antimatter is.

In the ToS, the Pauli exclusion principle[6] (no two identical fermions may occupy the same quantum state simultaneously),

[6] http://en.wikipedia.org/wiki/Pauli_exclusion_principle

simply becomes: Two particles cannot occupy the same place in the Grid.

2.4 Particle Formation

All particles are composed by the elementary negtrino held together by the strong magnetic force of the negtrino itself, resulting from its rotating charge. That is the atomic strong force, overriding the repelling electrostatic charge force at short distances.

Figure 7, where each negtrino is represented by a cylindrical magnet, illustrates the build-up of composed particles.

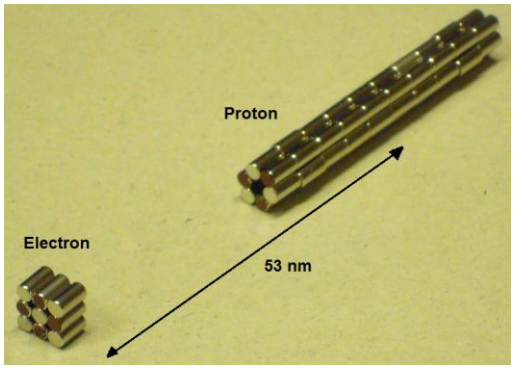

Figure 7: The hydrogen atom built by cylindrical magnets to illustrate the geometry of the proton and the electron. The electron is trapped in a potential well at one of the two poles of the proton and does not have to orbit.

The particle cores are mass-less (even though they have binding energy). It will later be explained how the Grid encapsulate the particle core, giving it mass.

All particles in our universe are negative (their actual charge). The visible positive charge of a proton is a hole-mechanism similar to what is used in the semiconductor chips of our electronic gadgets.

The overall negatively charged Grid hides most of the charge of a particle. The remaining visible charge may be negative, neutral or positive.

While most of the magnetic moment of composed particles is "used up" for holding the core together, the charge remains and pushes off negtrinos in the Grid to "make room for particle".

The electron consists of nine negtrinos, thus having an actual charge of -3 e, pushes off six negtrinos in the Grid, whereby only the charge of three negtrinos becomes visible, giving it the visible charge -1 e. The neutron consists of 69 negtrinos, has an actual charge of -23 e and pushes off the same amount of negtrinos in the Grid as it consists of, resulting in neutral visible charge. The proton consists of 63 negtrinos and has an actual charge of -21 e. It pushes off 66 negtrinos in the Grid, whereby its visible charge becomes +1 e.

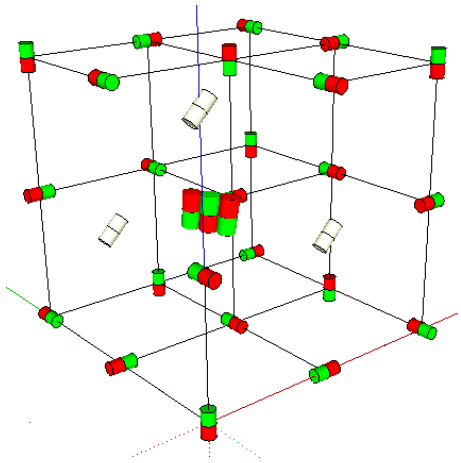

Figure 8: A neutrino consisting of 3 negtrinos pushes off 3 negtrinos in the Grid (white), getting zero visible charge. It does not "take over" any negtrinos in the Grid and therefore shows no mass.

2.4.1 Support

(ToS 4) Explains why the negative electrons do not fall into the "positive" atom nucleus. (Quantum theory relies on unexplained rules about a lowest possible energy level.)

(ToS 4.2.6) All common particles have been modeled consisting of only negtrinos and found to match known decays, regarding resulting particles, their spin and charge. (See tables and more.)

(ToS 4.1) The known density of atom nucleus corresponds to the number of negtrinos in neutrons and protons and the size of the negtrino assuming contact in the core.

(ToS 4.2.6 Table 1) The magnetic moment of the negtrino compared to the known magnetic moment of the electron, proton and neutron, matches well how particles composed of more negtrinos get their magnetic moment cancelled out.

(ToS 4.2.6) The ToS model allows for a "particle zoo" as was discovered in the 1950s and 1960s.

(ToS 4.2.6) The magnet modeling of particle cores has resulted in reasonable and stable compositions of all known particles. See Table 1 to Table 4.

(ToS 4, Table 1 to Table 4) These tables fill all likely particle positions. They describe all known "elementary" particles in the Standard Model and have no gaps for new particles to be found (except for the proposed spin 0 dark matter particles).

Computer simulation as suggested in ToS 3.1.4 should reveal details of the Grid and confirm or correct the description given.

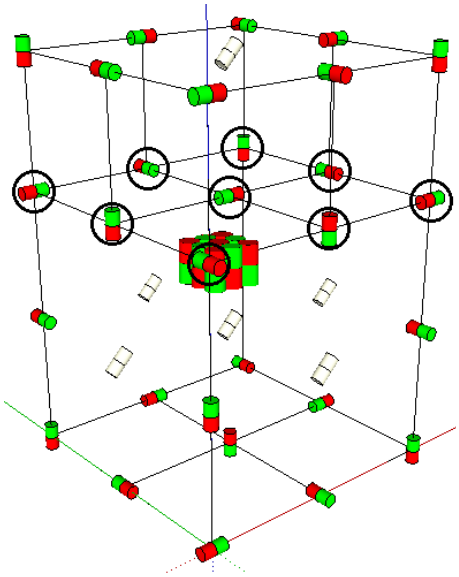

Figure 9: An electron consists of 9 negtrinos, but will only push-off 6 negtrinos (white) in the Grid and thereby gets a visible charge of -1 e. In addition, the Grid will redirect the magnetic energy from 9 negtrinos (circled) from holding the Grid together, to bind to the electron, giving it a rest mass of 9x57=511keV.

2.5 The Origin of Gravity and Mass

In the ToS, mass is created by a mechanism – It is not a quality of particles. Einstein taught that the mechanism generating gravity is curving of space-time around matter. Since the Grid makes up space, that curving is simply a reduced negtrino (and charge) density in the Grid. Mass is also created by a mechanism giving an increased negtrino (and charge) density when the Grid encapsulates particles.

The Grid is held together by the attracting magnetic forces between the negtrinos, balancing the repelling electrostatic forces between their charges. If some magnetic attracting forces are cut off, the Grid will expand a bit and cause a reduction in the surrounding negtrino (and charge) density – the source of a gravity field.

The neutrino in Figure 8 pushes off 3 negtrinos in the Grid, which weakens the Grid, makes it expand and cause some gravity. For larger particles, the Grid responds to the weakening by forming a Grid room where some of its negtrinos bind to or encapsulate the particle, by redirecting its magnetic energy from holding the Grid together. That mechanism results in mass and much more gravity, since the Grid room "cuts a larger hole" in the Grid.

The electron pushes off 6 negtrinos in the Grid and binds to 9 other. The redirected magnetic energy from those 9 negtrinos shows up as the rest mass of the electron: 9x57 = 511 keV.

For larger particles like the proton and neutron, as well as atoms, the Grid encapsulates them in spherical Grid rooms having 13 or more layers (ToS 5.5.2 Table 5), giving such particles a high mass.

The attracting forces of the negtrinos in the Grid room cause a slight compression of the Grid therein (increased charge density) and an expansion of the Grid (reduced charge density) around the particle room. The increased charge density in the Grid room gives mass to the particle it encapsulates. The reduced charge density outside the Grid room is the source of an electrical E-field, which is the gravity field!

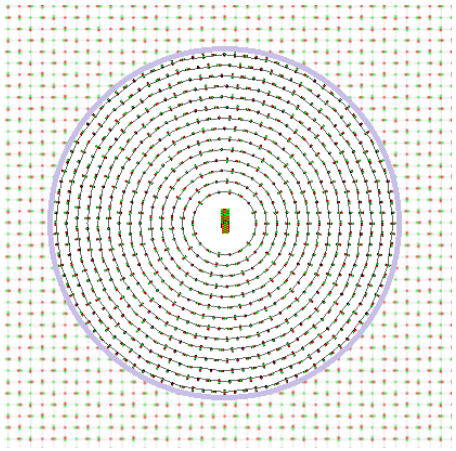

Figure 10: The Grid room of a proton consists of thirteen layers of negtrinos that encapsulate the particle.

The particle is stuck in its Grid room – all movements are at the border between the Grid room and the Grid.

The Grid room is magnetically decoupled from the Grid when the magnetic energy is redirected. That makes it possible for matter to move in the Grid, even though it is electrostatically encapsulated by its Grid room.

The Grid rooms (only being able to give 96 kg/m^3 of mass to the matter it encapsulates) do not fit within liquid or solid substances and therefore form a large common Grid room surrounding an object.

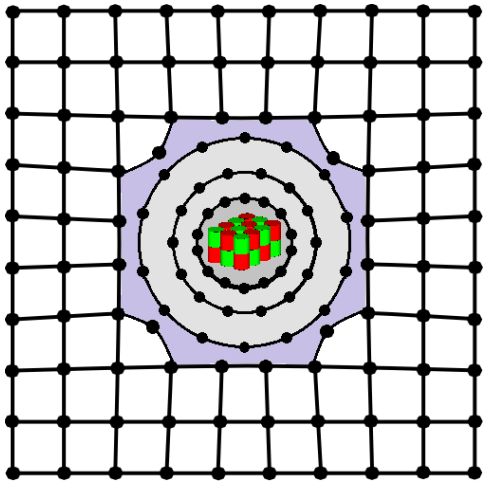

Figure 11: The charge density is reduced around the Grid room encapsulating matter. The resulting electrical E-field is the gravity field. The pressure from spherical layers inside the Grid room increases the charge density, which becomes the mass.

2.5.1 Support

(ToS general) Explains how the proton and neutron can have 2,000 times more mass than the electron.

(ToS 5.5) The Grid room mechanism, giving mass (increased charge density) and gravity (reduced charge density) different signs, explains why gravity always is an attracting force.

(ToS 4.4) Different Grid rooms for the same particle can explain some of the "generations" of particles in the Standard Model.

(ToS 4.5.3, 4.5.7) The Grid has 96.80 kg/m^3 (the negtrino density in the Grid times the magnetic energy of the negtrino converted to mass) to redirect as mass. Substances with lower density are always gases. All liquid and solid matter has higher density than 96.80 kg/m^3.

(ToS 4.3.6, 4.5 and 6.1) With the magnetic energy of the Grid room showing up as the mass of the particle, energy is really magnetic moment density (which is the redirected entity). Measured in Am^2 per m^3, energy becomes A/m instead of the usual kgm^2/s^2. Just as shown in 1.1 of this document or in ToS 6.1, we again see that kg is As^2/m^3 instead of a base unit.

(ToS 4.3.6) The total charge increase Q of an object, due to the pressure of the Grid room, is calculated via Einstein's mass energy equivalence $E=mc^2=\frac{1}{2}QV_0$ to $m=\frac{1}{2}Q=2mc^2/V_0$, where V_0 is the electric potential of our universe. Using that Q and V_0, the "action on a distance forces" upon mass (Gravity force, F=ma, and even the new force accelerating distant galaxies) are derived in ToS 5.5.1, 5.4 and 5.3!

There is a good explanation to why we have not recognized the gravity field as an electric E-field and mass as charge increase. When we experience a gravity field, e.g. around the Earth, we are in the source, among the charges, that create that very E-field. The reduced charge or negtrino density close to the Earth is right at the location of the mass it acts upon – It is not generated by charges at some other location. It is not a soft E-field that easily can be affected, e.g, short circuited or shielded off.

A key point of Einstein's general relativity is that the source of gravity is outside of the object – space-time curves around an object. The same applies to the mass mechanism – the source of mass it is also outside of the object, which has made mass difficult to understand and describe.

Einstein's curved space-time gravity is a good description of the ToS reduced negtrino density in the Grid being the source of gravity. The Grid makes up space and the negtrino spacing determines the distance of the electrons to the atom nucleus, the size of the atom itself is directly affected by the gravity field! The size of a ruler, a clock or whatever that is made up by matter is changed. And so is the speed of light, since it depends on the distance between the negtrinos carrying the photon. Gravity curves space-time!

(ToS 4.8) Without showing mass (does not bind to any negtrinos in the Grid), the neutrino generates more than enough gravity (weakens the Grid be pushing off three negtrinos) to account for the missing dark matter.

2.6 Most of the Mass and Energy of Matter is Outside of an Object

For all solid and liquid substances (not gases), the outer layers of the particle rooms form a common Grid room, extending far outside of the substance itself (ToS 4.5.3). The Grid room can only contribute with a mass of 96 kg/m^3. For a substance with a density of 1 g/cm^3, like water or a human body, the Grid room volume is 10 times larger than the body itself, see Figure 12.

Most of the mass and energy is in the Grid room outside an object – It is not in the object itself!

This also applies to large objects like planets and stars. The earth's Grid room stretches beyond the GPS satellites, but below geostationary satellites. The Grid room of the Sun is 2.4 times its visible size and extends to 3.4% of Mercury's orbit.

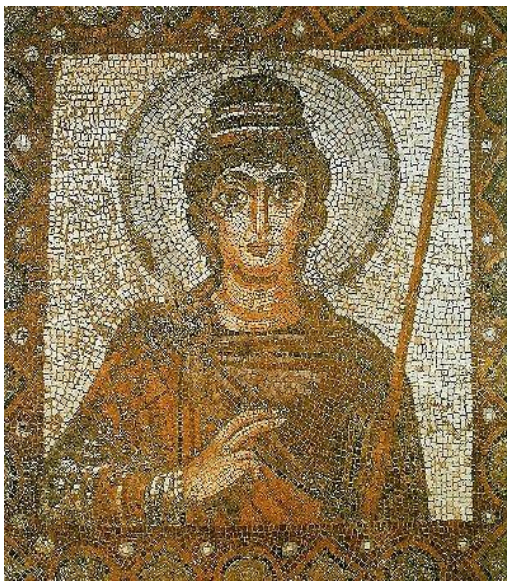

Figure 12: A Grid room surrounds every object. Around a sphere with a density of a human body, its diameter is 2.2 times larger than the sphere, just like the Gloria in this mosaic. The Grid of negtrinos would be arranged similar to the mosaic squares.

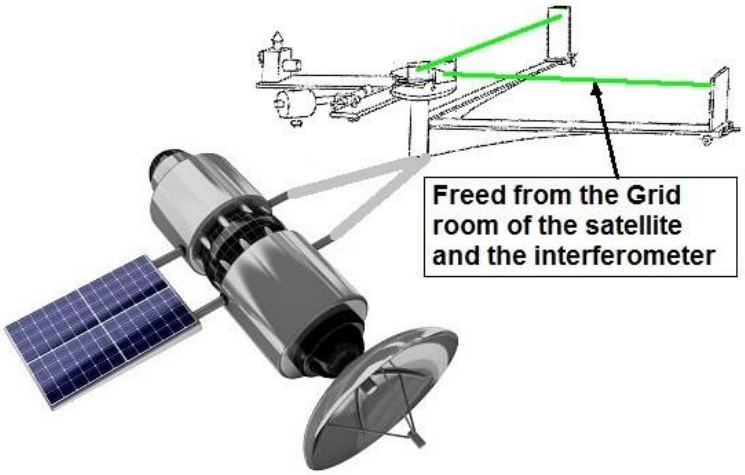

Figure 13: A modified Michelson–Morley interferometer on a satellite will show that the speed of light varies when the satellite is moving in the Grid. It is important that the traces between the mirrors are not in the Grid room of the satellite or in the Grid room of the interferometer itself.

A moving interferometer with the light traces freed from its own Grid room, e.g. in a vacuum chamber on the earth, will also show that the speed of light is not constant relative the observer.

2.6.1 Support

(ToS 4.4.10) The Michelson–Morley experiment[7] in 1887 showed that the speed of light is independent of motions of the observer. That is because the speed was measured in the Grid room of the interferometer itself. In the ToS, light is a wave in the Grid with a speed only constant in relation to the Grid. Figure 13 suggests how that can be verified. (Special relativity is still correct. The Principle of Invariant Light Speed relates to motions of the light source, not the observer!)

(ToS 4.5.5 to be verified) The discontinuity in the charge density at the Grid room border can be detected in the electrical E-field. The experiment performed indicating the Grid room border at the expected radius around objects must be refined and verified.

[7] http://en.wikipedia.org/wiki/Michelson%E2%80%93Morley_experiment

(ToS 4.3.3 and 5.5) The mass and gravity mechanism via a Grid room is the reason for gravity being around 10^{40} times weaker than the electromagnetic force itself. The total charge density increase in the Grid room is only a 3.44×10^{-23} part of the charge density of the Grid itself (called the Grid room filtering).

2.7 The Atom model and Atomic Matter

Figure 14 and Figure 15 illustrates the charge density, the gravity field and the electric potential in and around an atom and atomic matter and some of its built-up.

The calculated data in Table 6 of ToS 4.5.2 allows for good understanding for how atoms make up substances of different densities by sharing more or less of their Grid rooms.

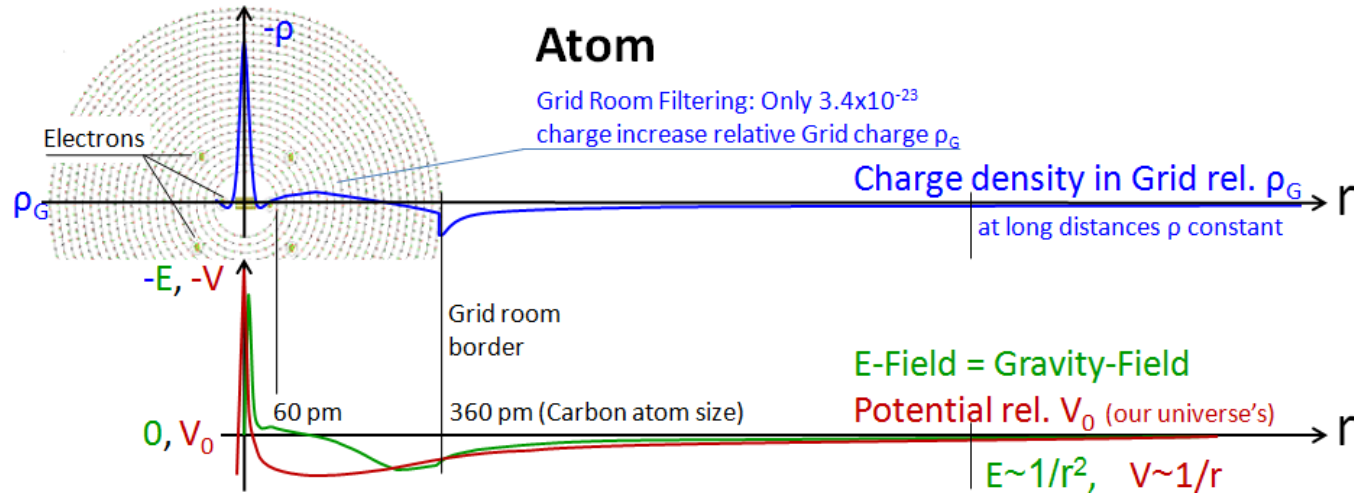

Figure 14: The charge density, the gravity field and the electric potential in and around an atom. Note that the electrons even out the charge density deviations. One third of the electrons are in the hole of the Grid room and two thirds are in the Grid room, to maintain the charge density balance.

Notice the potential well for the electrons to rest in. There is room for four more electrons in the second "orbital". The negative actual charge of the nucleus is stopping the electrons from falling into nucleus.

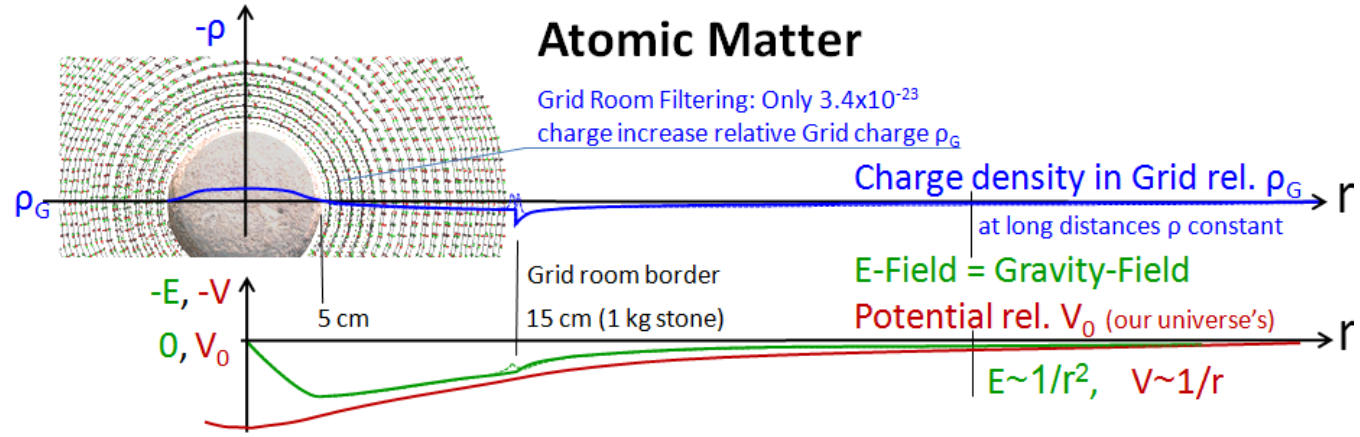

Figure 15: The charge density, the gravity field and the electric potential in and around an atomic object, here a 1 kg spherical stone. The small dotted charge density and E-field discontinuities at the Grid Room border, indicate the detected field that is described in ToS 4.5.5.

2.7.1 Support

(ToS 4.5) The electrons rest in an electrostatic potential well formed by the pushed-off negtrinos in the Grid around the nucleus with an actual negative charge. There are no "special rules" required to keep the electrons from falling into a positive nucleus, since the nucleus only has positive visual charge.

(ToS 4.5) The electrons do not have to orbit around the atom nucleus, but can simply rest in the electric potential well. The fact that the atomic s-orbitals have no angular momentum[8] supports this model.

(ToS 4.5.8) The electrostatic pressure in the hole of the Grid room helps the residual strong magnetic force between the nucleons to hold the nucleus together. That electrostatic pressure is probably the weak force of the Standard Model.

(ToS 4.5.6) With a 10 pm negtrino distance, no atomic matter can have a density above 23,000 kg/m^3. The densest chemical element, Osmium, has a density of 99.7% of its theorized maximum, which is a very hands-on support for the Theory of Something.

There seem to be some building block of negtrinos that the Grid uses to build the spherical layers of. These building-blocks fit the size from a proton to the heaviest atom (plutonium-244), but not below or beyond that range (for stable particles). In ToS 4.5.9 (formulated as a riddle) it is pointed out that the 244 number also shows up as the number of negtrinos in the Grid, that each negtrino inside the hole of the grid room engages to get mass.

It should be possible to computer simulate, as outlined in ToS 3.1.4, to understand the Grid room design better.

2.8 Gravity, F=ma and Distant Force

In the ToS, all forces acting on a distance on matter are real (not fictitious), of electrical nature and act on the charge increase in the Grid room encapsulating matter. Their laws are derived by classic electromagnetic theory. Figure 16 illustrates how the (long distance) gravity equation is derived.

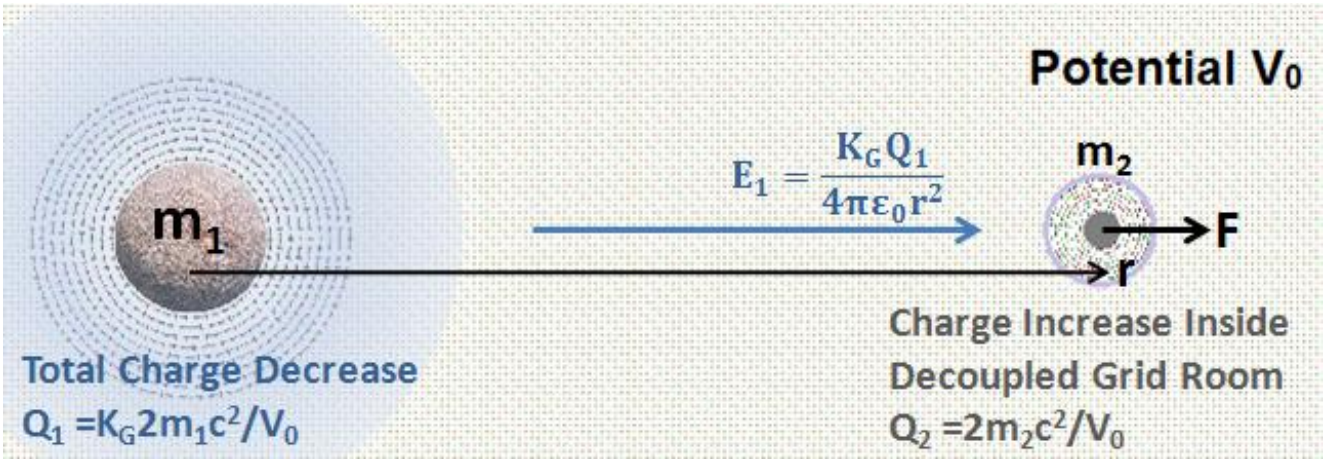

Figure 16: At long distances, it is the total charge decrease in the Grid around an object (m_1) that causes the gravity E-field. That charge decrease is mostly outside the Grid room. That electrical E-field acts upon the total charge increase inside the Grid room border of another object (m_2). Objects are encapsulated and stuck in their Grid rooms, but the Grid rooms are magnetically decoupled from the Grid, so they can move.

[8] http://en.wikipedia.org/wiki/Atomic_orbital

2.8.1 Support

(ToS 5.5.1) The gravity law is derived using classic electromagnetism:

$\boldsymbol{Gravity\ Force}$: $\boldsymbol{F(r)=-\frac{4\,c^4 R_0}{W_{de}}\frac{m_1 m_2}{r^2}}$, valid only at long distances,

The gravitational "constant" $G(R_0)=\frac{4\,c^4 R_0}{W_{de}}$ varies with R_0 (the radius of the universe) and W_{de} (the total dark energy in our universe). (Mass also varies with W_{de}, so the gravity force remains.)

(ToS 5.4.2) Newton's second law of motion is derived using classic electromagnetism (Never before has it been shown where the inertial mass force comes from.):

$\boldsymbol{Inertial\ Mass\ Force}$: $\boldsymbol{F=ma}$

(ToS 5.3) The force accelerating distant galaxies is derived using classic electromagnetism:

$\boldsymbol{Distant\ Force}$: $\boldsymbol{F(r)=\frac{4mc^2 r}{3R_0^2-r^2}}$

The distant force is a simple consequence of a charged universe and does not depend of the age of the universe or the dark energy! It just depends on the distance r from the center of the universe. R_0 is the radius of the universe.

It remains to verify the distant force law against measured data of accelerating galaxies.

2.9 Beyond Atomic Matter: Stars and Black Holes

With mass and gravity being mechanisms and not qualities of particles, it is unlikely that particles in high density plasma and degenerate matter as found in stars, show the same amount of mass and generate the same amount of gravity as atomic matter. Atoms only exist in the mass span of 1 (hydrogen) to 244 (plutonium) and ToS 4.5.6 shows that atomic matter cannot have a density above 23,000 kg/m^3.

Smaller particles like the electron generate much less mass and gravity per negtrino than atoms and it is likely that condensed matter generate much more mass and gravity per negtrino than atoms. If that is correct, stars are not at all "as large as we think". The Sun then consists of much less than 333 000 Earths – it just produce that much more gravity.

Black holes contain postrinos – antimatter – and use no Grid room mechanism (Grid rooms only apply to a system of a single charge polarity). Direct electrical forces are in effect and black holes produce $5.6\text{x}10^{18}$ times as much gravity (per postrino) as atomic matter (per negtrino) (ToS 4.7.2 Table 6). Thus, black holes only contain a tiny fraction of the matter we thought they had swallowed. Instead, all matter falling into black holes is crushed and radiated back (ToS 4.7.2.7). Part of the excessive energy generates postrinos (and negtrinos in pairs) that are sorted into the black hole.

The figures and Table 6 from ToS 4.7.2 is shown to summarize and support the ToS view on stars and black holes.

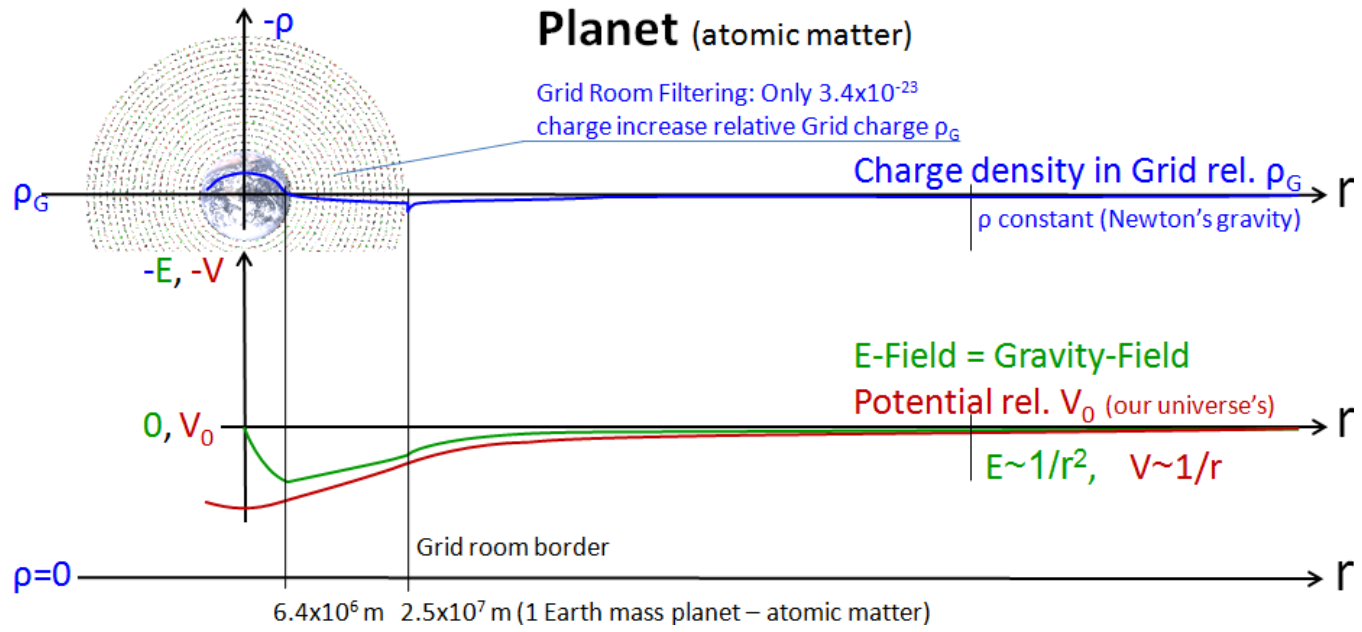

Figure 17: Illustration of the charge density, the gravity field and the electric potential in and around a planet. Planets consist of atomic matter and the diagram is similar to Figure 15.The size calculations in this and the following figures are based on that the contribution from the Grid room always is 96.4 kg/m^3(as shown in ToS 4.5.3), which makes up the mass of the object encapsulated by the Grid room.

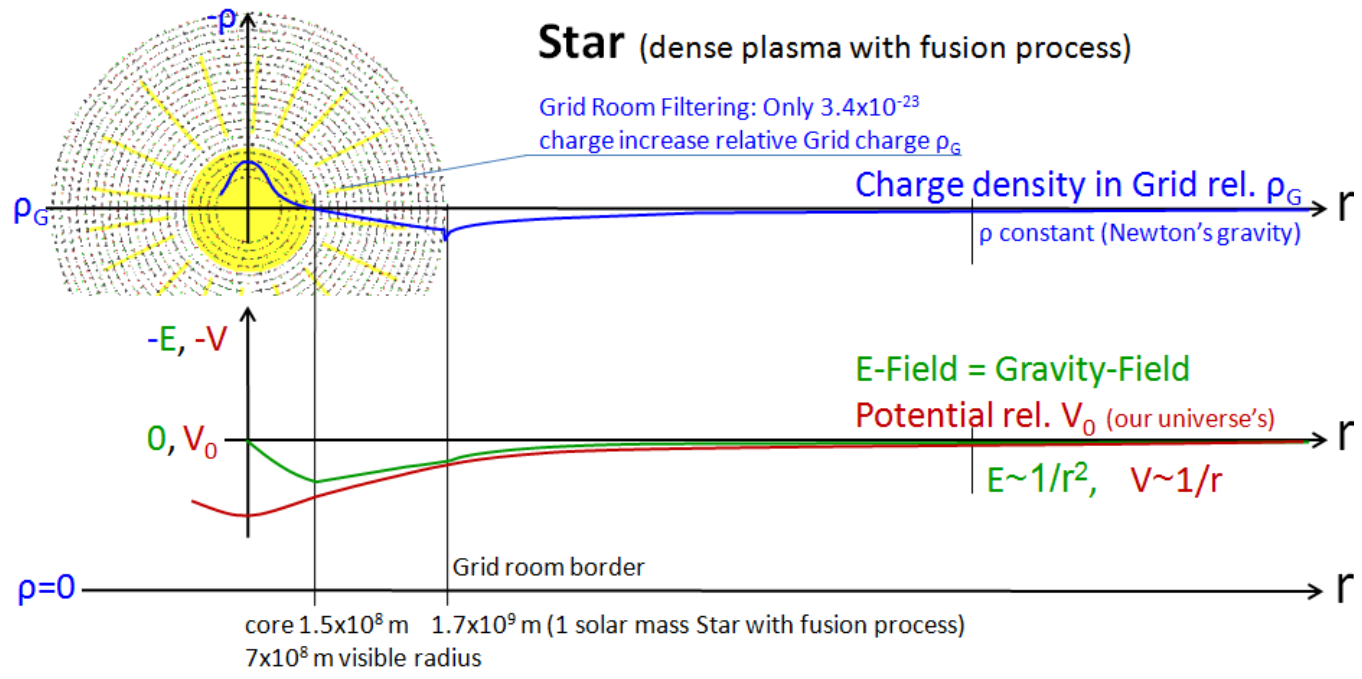

Figure 18: Illustration of the charge density, the gravity field and the electric potential in and around an ordinary star. The core of the star contains plasma of higher density than is possible for atomic matter, and the fusion process upholds the gravity pressure from further compression from the gravity.

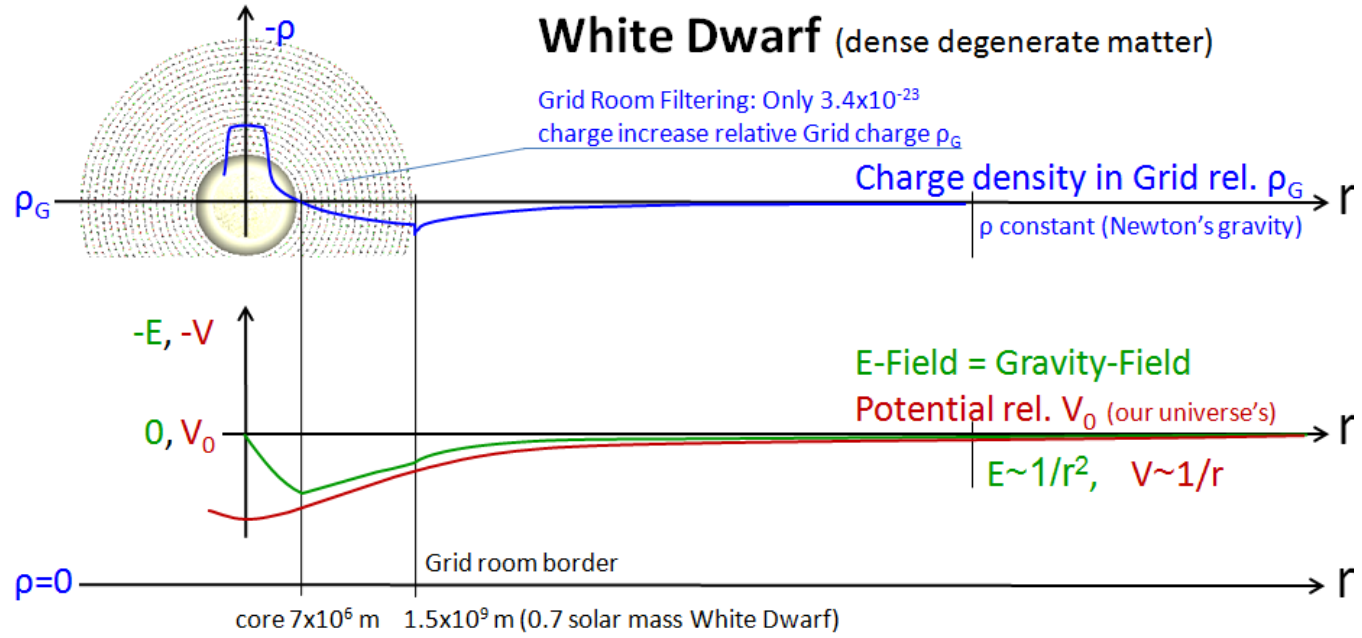

Figure 19: Illustration of the charge density, the gravity field and the electric potential in and around a white dwarf star, which contain very high-density degenerate matter. That type of star is very dense, since it is out of fuel for fusion, and the core has collapsed under the gravity pressure, until it is electrostatically balanced by the actual negative charges between the particles making up the core of the star.

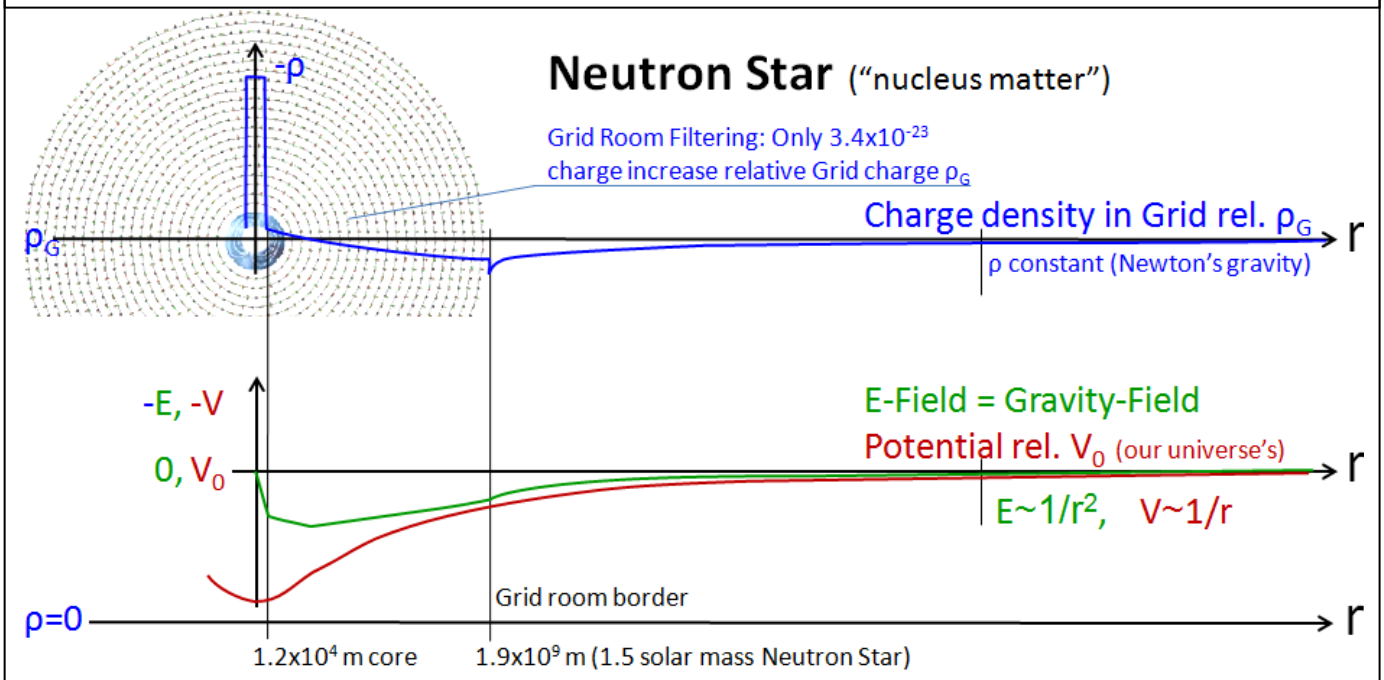

Figure 20: Illustration of the charge density, the gravity field and the electric potential in and around a neutron star. The core is about as dense as an atom nucleus and "contact" between the neutrons are stopping further collapse under the gravity pressure. Further increased gravity pressure can smash the neutrons, release enormous energy and may result in a black hole.

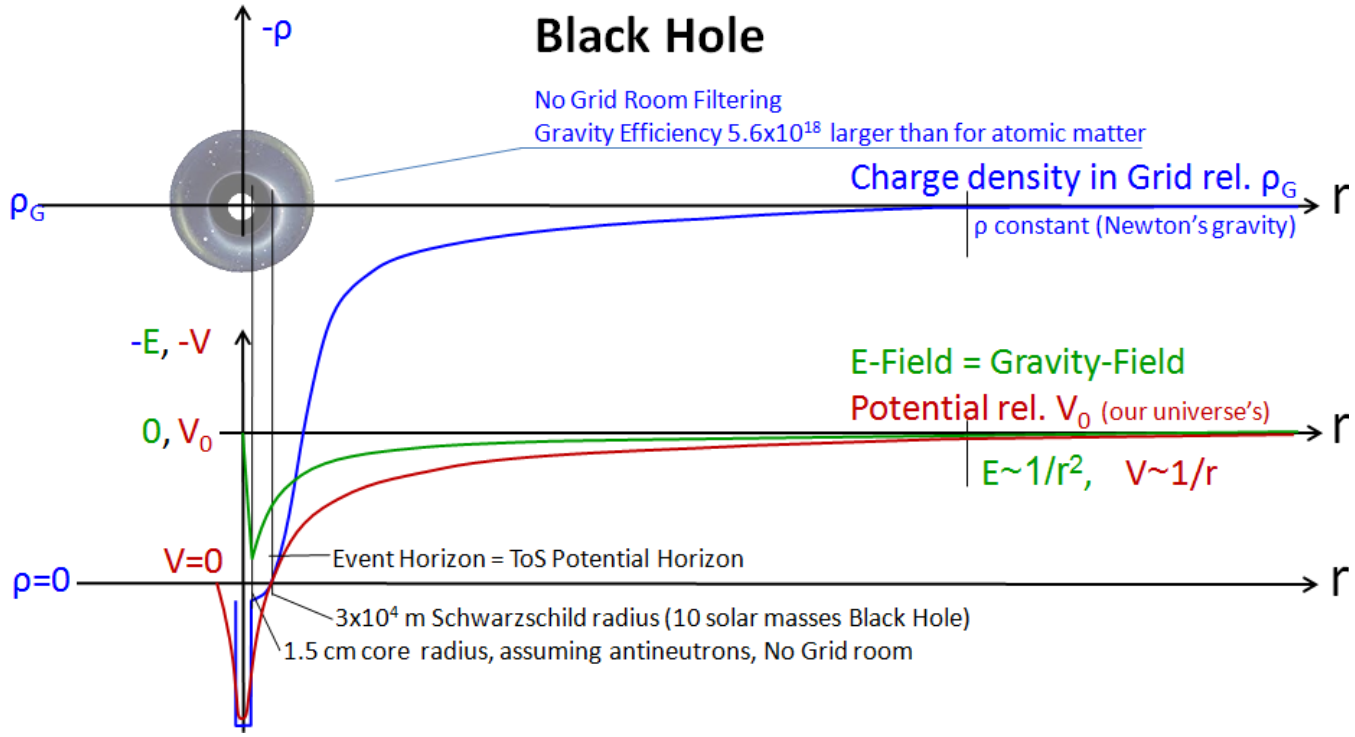

Figure 21: Illustration of the charge density, the gravity field and the electric potential in and around a black hole. There is no Grid room around a black hole. Its gravity is directly caused by actual positive charge, since it contains antimatter – postrinos. At the event horizon, the charge density and electric potential is zero. Due to the zero charge density at the event horizon, or potential horizon in the ToS, there is an intense negtrino and postrino pair generation that upholds the pressure and separation between the black hole postrinos and the negtrinos in our Grid.

Black holes only contain a small amount of (anti)matter, much less than what is currently believed. Since they generate gravity by direct electrical forces, without any Grid room filtering, a black hole is 5.6×10^{18} times more efficient in generating gravity than atomic matter. If the antimatter within a black hole is in the form of antineutrons (compare with a neutron star), a core diameter of 3 cm will produce the same gravity as 10 solar masses.

Particle, Atom, Star Type and **Black Hole**	Nt, Total Number of Negtrinos	Np, Pushed Off Netrinos, 3(Qa-Qv)	Z, Atom Number (Protons)	A, Atom Mass Number (Protons+Neutrons)	Mass in u (Atomic Mass Unit))	MassTroop (Grid Room Negtrinos/Negtrino)	Mass Efficiency factor (Charge increase per negtrino in particle)	Matter Portion (As in Table 5)	Charge Density Increase C/m3 (That is what we actually can measure, but translate to kg/m3)	Density (kg/m3)	Gravity value withing parenthesis (if different)	Charge Density Decrease C/m3 (That we see the gravity of, and think is caused by mass kg/m3)	Gravity Efficiency Factor (Charge decrease per negtrino in particle)
Neutrino	3	3			0	0,00	0	*If 100%*	*0,00E+00*	*0 (97)*	-3,96E-08		-7,76E-22
Electron	9	6			0,000549	1,00	-3,44E-23	*If 100%*	*-1,76E-09*	*97 (162)*	-6,62E-08		-1,30E-21
Proton	63	66	1	1	1,007276	262,31	-9,03E-21	*If 100%*	*-4,61E-07*	*25392*	-1,04E-05		-2,03E-19
Neutron	69	69	0	1	1,008665	239,83	-8,26E-21	*If 100%*	*-4,22E-07*	*23216*	-9,49E-06		-1,86E-19
Hydrogen H	72	44	1	1	1,00794	229,67	-7,91E-21	0,0003%	-1,27E-12	0,07	-2,86E-11		-1,78E-19
Helium He	282	88	2	4	4,002602	232,86	-8,02E-21	0,0008%	-3,27E-12	0,18	-7,36E-11		-1,80E-19
Lithium Li	492	132	3	7	6,941	231,45	-7,97E-21	2,3834%	-9,70E-09	534	-2,18E-07		-1,79E-19
Beryllium Be	633	176	4	9	9,012182	233,58	-8,04E-21	8,1821%	-3,36E-08	1850	-7,56E-07		-1,81E-19
Carbon C	846	264	6	12	12,011	232,92	-8,02E-21	15,5231%	-6,36E-08	3500	-1,43E-06		-1,80E-19
Oxygen O	1128	352	8	16	15,9994	232,70	-8,01E-21	0,0062%	-2,54E-11	1,4	-5,72E-10		-1,80E-19
Iron Fe	3942	1144	26	56	55,847	232,43	-8,00E-21	34,9971%	-1,43E-07	7874	-3,22E-06		-1,80E-19
Barium Ba	9414	2464	56	134	134	233,52	-8,04E-21	15,5273%	-6,38E-08	3510	-1,43E-06		-1,81E-19
Osmium Os	13338	3344	76	190	190,23	233,99	-8,06E-21	99,7350%	-4,10E-07	22590	-9,23E-06		-1,81E-19
Plutonium Pu	17118	4136	94	244	244	233,85	-8,05E-21	87,5384%	-3,60E-07	19816	-8,10E-06		-1,81E-19
The core of the Sun	If MatterTroop is same as atomic					229,64	-7,91E-21	*6,7*	-2,73E-06	1,50E+05	-6,13E-05		-1,78E-19
The core of the Sun	If higher MatterTroop, e.g.					1 000	-3,44E-20	*1,5*	-2,73E-06	1,50E+05	-6,13E-05		-7,75E-19
White dwarf star	If MatterTroop is same as atomic					234,63	-8,08E-21	*4,40E+04*	-1,82E-02	1,00E+09	-4,09E-01		-1,82E-19
White dwarf star	If higher MatterTroop, e.g.					10 000	-3,44E-19	*1,03E+03*	-1,82E-02	1,00E+09	-4,09E-01		-7,75E-18
Neutron star	If MatterTroop is same as atomic					239,83	-8,26E-21	*1,72E+13*	-7,27E+06	4,00E+17	-1,64E+08		-1,86E-19
Neutron star	If higher MatterTroop, e.g.					100 000	-3,44E-18	*4,13E+10*	-7,27E+06	4,00E+17	-1,64E+08		-7,75E-17
Atomic nuclei (as if larger objects could consist of that)						235,60	-8,11E-21	*1,01E+13*	-4,18E+06	2,30E+17	-9,40E+07		-1,83E-19
Black hole						*-2,90E+22*	1						1

Table 6 from ToS 4.7.2 shows the revised view on mass and the generated gravity. Only in atomic matter is the mass and gravity, what we so far have believed, seen and measured. It is charge – not mass - that counts in matter! Degenerated matter in stars probably generates much more mass and gravity than atomic matter and in black holes there is very little (anti)matter. Further, the mass-less neutrino generates gravity – a considerable amount that can be the missing dark matter.

The **MassTroop** value, that is around 234 for atomic matter, shows how many negtrinos in the Grid that each negtrino in the particle engages to give it mass. It is calculated as ParticleMass/(NumberOfNegtrinosInParticle*MagneticEnergyOfNegtrino/c^2). The MassTroop value is smaller for particles that are smaller than nucleons and probably much higher for stars, which do not consist of atomic matter.

The **Mass Efficiency Factor** is the MassTroop multiplied by the Grid Room Filtering of 3.4×10^{-23} calculated in ToS 4.3.3. By including the Matter Portion and negtrino charge density in the Grid, we arrive at the **Charge Density Increase** that we interpret as mass. Multiplying by $2mc^2/V_0$ from the relation $mc^2 = \frac{1}{2}QV_0$, we get the ordinary **Density** in kg/m^3.

The **Gravity Efficiency Factor** is about the same, but 22.5 times higher as shown in ToS 5.5.1 (The charge reduction outside the Grid room is 23.5 times larger than the charge increase inside the Grid room). The addition for pushed-off negtrinos in the hole of the Grid room is only noticeable for the neutrino and electron.

Combining the Mass Efficiency Factor of 8×10^{-22} and the Gravity Efficiency Factor of 1.8×10^{-19} for atomic matter, we see why gravity is such a weak force, only around 10^{-40} compared to the direct electrical force.

Two rows are shown for each type of star. The first row is in case their MassTroop value is the same as for atomic matter, while the second row exemplifies a higher MassTroop value to show that effect. There is much less matter in such stars if their MassTroop values are higher.

Black holes (further discussed in ToS 4.7.2.5 to 4.7.2.7) consist of antimatter and are simple structures without any Grid room. The antimatter is just positive charge particles, being the source (the antimatter particles in the black hole) of both mass and gravity. They exhibit direct electrical forces and their Mass Efficiency Factor and Gravity Efficiency Factor are therefore one (1). Black holes therefore show large mass and produce high gravity without consisting of much (anti)matter!

Cell values in italics have been derived differently to give a value relevant to the column label.

2.9.1 Support

(ToS 4.7.2) The extreme energy release of exploding stars (supernovae and hypernovae) is probably a result of a higher mass producing form of matter being converted back to atomic matter, whereby most of the bound energy in the star (its mass) would be released.

(Christian Ott http://www.tapir.caltech.edu/~cott/) Computer simulation of collapsing stars using traditional mass model, shows no explosion – stars just whimper.

(ToS 4.7.2.7) Gamma ray bursts and quasar activity are signs of matter being crushed and radiated back when falling towards a black hole.

(ToS 4.7.2.6) An odd consequence of black holes containing antimatter and not having a Grid room, is that they repel each other with a strength of 1/22.5 of the ordinary gravity attraction (ToS 5.5.1). It goes against the common thoughts that black holes merge. On the other hand, that may be the reason why dual waltzing black holes[9] in the center of galaxies are more common than expected – They do not swallow each other when galaxies collide, but are still kept together by attracting the matter in the merged galaxy.

These findings certainly require more study from a cosmological side.

2.10 Universes Everywhere – No Emptiness

The ToS universe model (ToS 7) does NOT require:

- that energy was created in the Big Bang or elsewhere
- a very rapid inflation stage to resolve any horizon problem
- new laws of physics and new particles appearing
- that space itself was created at the birth of our universe 13.7 7 billion years ago

In the ToS, we already have the ingredients for universes:

- Negtrinos and postrinos arranged in Grids are already filling up space in separate universes, separated by potential horizons. There is no emptiness – "Nothing" is unstable (ToS 8.2.1).
- The Grids are without net energy.
- Mass and gravity is relocation of energy.
- The distant force accelerates galaxies which eventually will reach the potential horizon to another universe of opposite charge.
- Matter cannot cross a potential horizon and is therefore crushed and radiated back, but black holes lose their potential horizon and explode into the other universe.

[9] http://keckobservatory.org/news/waltzing_black_holes_take_center_stage_at_astronomy_meeting

(ToS 7.2) At the Big Bang 13.7 billion years ago, a large black hole from the positive universe surrounding our negative mother universe, entered into our negative mother universe, exploded and seeded our "baby universe" - an expanding region of a negative "mother universe" with a higher negtrino density than the equilibrium of the Grid.

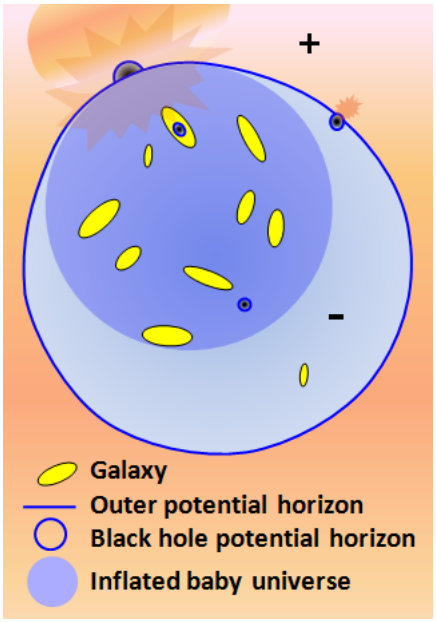

Figure 22: Our universe a baby universe created by the Big Bang injecting excessive negtrinos in a mother universe already filled with negtrinos.

(ToS 7.2.1) Mass is redirected energy from the Grid – The positive energy in mass is balanced by the negative energy in the surrounding gravity field. It does not take energy to create mass, but the seeding by the charge over-pressure speeds up the process.

(ToS 5.2) The energy injected charge at the Big Bang represent the only net energy in our universe and still remain, although very diluted. That energy is seen as the dark energy density U_{de} $=6.083x10^{-10}$ J/m^3 (which is the 72.8% missing part of the critical density (9.30×10^{-27} kg/m^3) needed to make up a flat universe as explained under 1.1 above). Today, that energy only corresponds to one extra negtrino per 386 km (ToS 5.2d)!

(ToS 7.2.1-2) The matter in the black hole coming from a positive universe was particles composed of negtrinos, which injected our already negative universe. The injected energy is the total dark energy we see in the universe today, $2.11x10^{71}$ J, which we would experience as a black hole "of $1.18x10^{24}$ solar masses", far beyond the super-massive black holes we to date have detected in our universe.

(ToS 7.2.3) The dark energy is borrowed from the surrounding positive mother universe that is left with the gravity field of the large black hole that was our Big Bang. That gravity field is a charge under-pressure in the surrounding positive universe. The Dark Flow (ToS 7.2.4) may be an indication of this pressure difference. **Overall, the energy of all universes is zero!**

(ToS 6.1 and 1.1 above) We see **the dark energy per negtrino and revolution** as $\frac{U_{de}d_n^3\varepsilon_0}{Q_n} = \frac{6.083x10^{-10}(1.0150x10^{-11})^3\ 8.8542x10^{-12}}{5.3406x10^{-20}} = 1.0545x10^{-34}$ Js which **is Plank's (reduced) constant**!

That is proof of the ToS and that mass is a mechanism instead of a quality of particles. kg is not a base unit but As^2/m^3.