

25 ANSWERS TO THE 25 QUESTIONS RAISED BY DAVID GROSS

Introduction:

- In 2004 the Nobel prize winner Prof. Dr. David Gross (Kavli Institute) at CERN, Geneva confronted Science with 25 questions that concern the foundation of the theory of astrophysics. Currently, mid-2016, Science has not answered these 25 questions yet. However, these answers are essential!
- According to the author, the questions raised by Prof. Gross are the result of a number of basic inaccuracies which are still present in the foundation of Science today. These inaccuracies have crept into the foundation through accepted theories, dissertations, scientific studies and literature.
- These basic mistakes concern:
 - a) the Theory of Relativity,
 - b) the Big Bang Theory,
 - c) the Atomic Model of Bohr with neutrons in the atom nucleus,
 - d) the system with four fundamental forces instead of only two elementary forces,
 - e) the direct linking of gravity to the mass of the atom nucleus and
 - f) the current Standard Model of elementary particles with three 'high-energy levels': up/down, charm/strange and top/bottom instead of only one 'low-energy level'.
- The author has discovered 14 fundamental mistakes (J2) and he elaborates on them in the documents published in Dutch and English on the website: www.uiterwijkwinkel.eu

The documents on the website include:

- a) The systematic deriving of the two most elementary forces of the proton / electron and that of the anti-proton / anti-electron as well as the other basic forces of *the atom*: (Documents F1c, F1d).
- b) Replacing the system of four fundamental forces by a system with only two elementary forces i.e. electric charge and magnetic spin of the proton and the electron: (F1c, F1d),
- c) The modification of the atom model of Bohr by changing all neutrons in the nucleus by one proton and one 'nucleus' electron: (F1d),
- d) The systematic deduction of all physical, chemical and mechanical forces on all forms of matter:
 - 1) ordinary atoms (F1d),
 - 2) black hole atoms / matter (F1e) and
 - 3) anti-atoms / anti-matter (C4):
- e) Substantially changing the Gravitational law of Newton: (Documents E3 and E3-1),
- f) Rejecting Einstein's Theory of Relativity: (Document G5),
- g) Replacing the superhot and explosive Big Bang by a super cold, explosion-free Little Bang which takes place at 0 Kelvin: (Document G6),
- h) Replacing the current 'high-energy' Standard Model' of 17 elementary particles with a new 'low-energy' Elementary Higgs Model 2014' with only *four Higgs particles*: (F1a 2014).
- i) Deriving the cycle of the universe in which the universe continuously goes through 29 phases / steps and which can easily be described. This cycle of the universe / Taeutcycle is completed in an energy neutral way. One cycle of the universe is completed in a period of approximately 2 - 3 trillion (10^{12}) years: (Document G7 and G8 Figures).

The purpose of the documents published on www.uiterwijkwinkel.eu is to correct the mistakes which were discovered and by doing this, to make far reaching improvements in the current foundation of the Sciences.

- In this document, J1, the author makes a *first attempt* to answer the 25 questions raised by Professor Gross.

- The author considers the *definitive answering* of the 25 questions of *Gross a task* of Science itself. These answers are only possible if the above mentioned mistakes or incorrect assumptions are removed from the foundation of Science. See Document J2.

Mr. A.P.B. Uiterwijk Winkel MSc. *) **) ***)
Zwijndrecht, The Netherlands

*) Copyright exists on all the documents (Document A6),

**) The author is grateful to Franklin Roos for his many good remarks,

***) The author would like to thank Adarshi Yadava for the splendid figures that accompany the explanation in the different documents.

***1) PREFACE:**

Thousands of physicists and chemists are studying at several renowned Institutes and Universities worldwide. These scientists are working on solving all kinds of fundamental issues regarding Science. They also have the best technical facilities, laboratories, particle accelerators, telescopes, equipment in space and the most advanced measuring equipment at their disposal. Furthermore, they have billions (10^9) of euros in financial funding at their disposal annually, to do this scientific and often military research.

In 2005, **Professor Dr. David Gross**, of the Kavli Institute California, surprised and confronted the scientific world when, during a lecture at CERN, he asked 25 questions concerning the fundamental problems Science is facing. The 25 questions concern the foundation of physics, astrophysics, particle physics and chemistry i.e. the basic pillars of the Sciences. These questions have still not been fully answered!

-) Origin of the questions; Gross' private analysis of the origin of these errors is missing:

Gross, himself, did not analyze the origin of his questions, neither did he query whether his questions might be the result of possible basic mistakes / errors in the current foundation of science (2016). It seems as if the foundation of science is not up for discussion. Regrettably, as this is probably where the problem originates from!

Gross has travelled across the world to raise these questions in public and to give an explanation for them. On July 12th 2006, the author attended his lecture in *Amsterdam*. However, up and until now (July 2016), physicists, astrophysicists, particle physicists and chemists have all failed to answer the 25 questions of **Gross** adequately. They have not even made an attempt or take the initiative to answer these questions!

As a result, the interest in these questions is gradually ebbing away. That is a shame, because these 25 questions raised by **Gross** indicate 25 real and fundamental problems in Science! Through these questions he places the inaccuracies in the foundation of the science on the agenda and opened it up for discussion!

-) Errors in the foundation of the Science obstructs the answering of these questions:

According to the author, answering these questions is blocked by more than ten basic errors present in the foundation of Science. Currently (2016) these mistakes / errors are deeply entrenched in Science. The elimination of these errors is becoming increasingly difficult, and might even become impossible.

In **Document J2**, the author identifies a number of these mistakes. Examples include explanations for the phenomena of gravity, 'dark mass / matter' and 'dark energy'. These basic errors result in **Gross** formulating his 25 questions. By raising these questions **Gross** has put the foundation of Science up for discussion, probably unintentionally.

-) First attempt to answer all 25 questions raised by Gross:

In this **Document (J1)**, the author makes a *first attempt* to answer the 25 questions of **Gross**. The ultimate answers must however be done by Science itself. This will compel Science to make far reaching corrections in its foundation.

The answers to the questions of **Gross** will have consequences for all Scientists in physics, astrophysics, particle physics and bio-chemistry. These answers to the 25 questions will definitely have consequences for almost all published papers and dissertations up until 2016. Most of these documents will have to be adjusted in content and conclusions. Some will probably even have to be rewritten, either in part or completely. It is understandable that nobody wants to receive a message such as this!

-) Science has to remove the existing errors:

The ultimate answers will force the Sciences to perform corrections in its own foundation. The final answers to the 25 questions of **Gross** will affect almost all current scholars in astrophysics, physics and chemistry and the answers will, most likely, come as a shock.

***2) PROBLEM: MISTAKES IN THE FOUNDATION OF SCIENCE:**

In 2016, the current foundation of Science seems to be considered as totally correct and acceptable to all scientists. However, from various documents by the author www.uitewijkwinkel.eu, it turns out that the current foundation of Science contains a number of basic errors which are explained in **Document J2**.

The most important mistakes are:

- 1) The Gravitational law of **Newton** where gravity is directly linked to mass; see Document **E3 and E3-1** for gravity and gravitational energy. Gravity is not linked to space-time,
- 2) The Theory of Relativity of **Einstein** and his $E = mc^2$ where mass is equal to energy; see **Document G5**,
- 3) The ban that prohibits electrons in the nucleus of atoms and accepts neutrons according to the Atomic Model of **Bohr**, see **Document F1d and relating figures**,
- 4) The system with *four fundamental forces* instead of a system with only *two elementary forces*: electric charge and magnetic spin. See **F1a 2014 + F1c**,
- 5) The *Big Bang Theory*; the universe started about 30 billion (10^9) years earlier than what is currently believed. The universe started with a super cold Little Bang (0 K). (**Document G6 and figures**),
- 6) The current *Standard Model* with 17 'high-energy' particles distributed over three levels instead of a simple model with only one 'low-energy' level with 4 Higgs particles *). (**Document F1a 2014**)

Currently, in the year 2016, these basic mistakes form a collectively accepted common property which is kept up through dissertations, reports and professional literature. The foundation will, in time, become increasingly difficult to correct.

*) The **Standard Higgs /string / snare Model** by **Uiterwijk Winkel (F1a 2014 + Figures)**, only includes:

- a) two *super-symmetrical Higgs* of the proton and
- b) two *super-symmetrical Higgs* of the electron.

In this 'low-energy' Higgs particles, kinetic energy and rotations over three axes generates:

- a) mass / anti-mass,
- b) a positive or negative charge,
- c) parallel and antiparallel spin: \uparrow or \downarrow ,
- d) a standard special volume $\neq 0$ and
- e) kinetic energy compressed as a fixed standard **unit of five**.

In this model and document the origin of mass, charge and spin is certified! The four characteristic forces are fully integrated in the Higgs particle. Mass and forces are not located on separate particles!

The author derived that mass, electric charge and magnetic spin on the elementary Higgs particles of the proton and the electron are caused by kinetic energy and rotational speed and therefore deform the Higgs particles whatever these Higgs may be. These elementary Higgs particles / strings / snares combat these deformations by generating a) mass/anti-mass, b) + or - charge, c) spin \downarrow or \uparrow and d) volume. This is elaborated on in **Document F1a 2014**.

These 4 most elementary 'low-energy' Higgs particles are real but will not be found in the 'high-energy' debris of particle accelerators! The 'high-energy' state results quantitatively in much more mass, charge and spin than is present in reality in the 'low-energy' state!

-) **The forces inside and outside of the atom have never been derived systematically in relation to kinetic energy and the velocity of the atom in the universe:**

In the past, the forces on the atom have never been systematically deduced regarding their origin and place inside the atom. The current Science has no clear explanation for the origin of these physical and chemical forces and the structure of bonds on matter and / or on the atom / molecule.

Physical and chemical forces of atoms do not spontaneously present themselves. They are exclusively caused and are the result of the movements of the atom in the universe. The author explains this link in **F1d**.

At present nobody in Science realizes that a number of forces on the atom and its structure are simply the consequence of the 5 – 9 movements of the earth in the universe! In **Documents F1c, F1d, C1 – C4**, the author has systematically deduced all forces for normal matter, black hole matter and anti-matter as well as the origin of gravity and gravitational energy. See **Documents E3 and E3-1**.

The two non-elementary physical and two chemical forces of the atom are caused by the rotational velocity of the atom in the universe and are generated by the 'shell' electrons of atoms. These forces are quantitatively linked to the amount of kinetic energy of the atom as a whole. See **Document F1d**.

Science is currently missing the direct relationship between speed / kinetic energy of the atom in the universe and the forces on the atom. The problem is circumvented in quantum mechanics and the complicated quantum field theory! This essential problem has still not been solved in Science in 2016!

Through the systematic diversion of all forces, it became obvious that a number of false and erroneous visions are present in the foundation of Science. These mistakes result in wrong visions and in wrong starting points for researches which lead to incorrect experiments and conclusions.

***3) THE PURPOSE OF THIS DOCUMENT:**

In this document (**J1**), the author aims to:

- 1) Make a *first attempt* to answer the 25 questions raised by **Gross**.
(The final answers to the 25 questions are, according to the author, a task for Science itself)
- 2) Point out the false assumptions and inaccuracies in the foundation of Science.
(These errors caused **Gross** to draft his 25 questions).
- 3) Start the discussion around the basic inaccuracies in the current foundation of the Science.
- 4) Bring these inaccuracies to light and remove them from science as soon as possible.

A number of these errors in the principles of the foundation of Science is detailed separately in **Document J2**.

*4) OVERVIEW OF THE VISIONS DEVELOPED BY THE AUTHOR:

In this document (J1), the author has taken the initiative to answer the questions, raised by Gross, in full. These answers are based on a total vision which the author has developed in the last five to ten years. This vision has been firmly recorded in various documents which are published on the website www.uitewijkwinkel.eu in both Dutch and English. Together these documents form a unity that covered the 25 questions of Gross totally.

Scheme 4-1: Documents of the author:

- The biochemical basics of living matter; *6 Laws of Biochemistry*; (B1, B2, B3 and B4).
- The *Little Bang* as the start of the universe and the cycle of 29 steps/phases which the universe passes through; (G1 - G10).
- The *two elementary forces* of the proton / electron: electric charge and magnetic spin; (F1c).
- The *three autonomous forces* of the atom in the event of an absolute stationary situation in the universe; (F1d).
- Adaptation of Bohr's *atom model* by replacing all nucleus neutrons by one proton and one 'core' electron (F1d).
- The *12 fundamental forces* of the ordinary atoms, subjected to movement(s) in the universe; (F1d).
- The *structure* of physical/chemical bonds of ordinary atoms related to the speed in the universe; (D1).
- The *eight forces* of the black hole atoms which are subjected to movement(s) in the universe; (F1e).
- The *fundamental forces* of the anti-atom subjected to movements in the universe; (C4).
- The explanation for the phenomenon of *gravity / gravitational energy*; (E3 and E3-1).
- The *7 basic errors* in the principles of the Theory of Relativity; (G5).
- The *Standard Higgs string / snare Model* with only *four super-symmetric Higgs particles* by Uiterwijk Winkel; (F1a 2014).
- The structure of *Majorana particles* such as neutrinos and photons; (F1b).
- The fundamental structure of the proton / electron and anti- proton / anti-electron from photons; (F1c).
- The construction of the elements of the periodic table via nuclear fusion from hydrogen; (F1d).
- The transformation of common atoms into black hole atoms; (F1e).
- The approximately 14 errors in the foundation of the sciences, (J2).

Explanation scheme 4 - 1:

- 1) In the period 1985 to 2000 the author deduced the *biochemical basics of living matter*. This resulted in the deduction of the *Six Laws of the Biochemistry of Living Matter*. All living matter in the universe is based on exactly the same biochemistry as found in living matter on planet Earth!
- 2) For energy reasons the periodic table of elements is exactly the same throughout the universe. See document F1d. The periodic table allows for only one biochemical system as found in all living matter on earth. This biochemical system (Biochemical Pathways and Recon2 model) also applies to all living matter throughout the whole universe!
- 3) As the periodic table contains only one biochemical system, living matter can evolve spontaneously anywhere on all planets in the universe that are compatible to earth. This concerns billions of planets with living matter and about hundred to thousand planets in every galaxy. Live is rare within a galaxy but relatively abundant everywhere in the universe.
- 4) This led to the author to derive the elemental forces on the proton / electron and then to systematically derive all the fundamental forces on the atom. These forces, which we encounter in our daily lives, are the consequences of the speed which the atom / earth is subjected to in the universe. These physical and chemical forces are specifically generated by the 'shell' electrons in the electron shells around the atom nucleus.
- 5) Gravity / gravitation is one of the forces in the universe related to the speed of the atom. Gravitation is only generated by the 'shell' electrons of atoms in combination with the rotational speed of the *atom* in the universe. Thus, gravity is not situated in the atomic nucleus nor related to mass!
- 6) Through the systematic deduction of all forces on all forms of normal matter, black hole matter and anti-matter, it appeared that several mistakes are embedded in the foundation of Science; see Document J2. The biggest mistake is that of **Einstein's** Theory of Relativity and his famous formula $E = mc^2$ where $m = \text{mass}$. See Document G5. Furthermore, the *Big Bang Theory* is a false representation of the origin of the universe.
- 7) The author has derived the *29 steps/phases* of the *energy-neutral cycle* through which the cycle of the

universe passes over and over again. This cycle of the universe continues endlessly. Completing one cycle takes about 2 - 3 trillion (10^{12}) years. Due to the special properties of gravity and gravitational energy this cycle of the universe is always completed in an energy neutral way!

The universe is the only possible perpetual mobile! The universe repeats the same cycle endlessly.

In answer to **Question 1** by **David Gross** this cycle of the universe / Taetucycle is described briefly.

See **documents G7(text)** and **G8(figures)**.

- 8) The **Laws of Conservation of Energy and Conservation of Momentum** only apply locally and temporarily and on a very small scale. These laws do not apply on the scale of the universe and throughout the cycle of the universe!
- 9) In **Document F1a 2014** the author has deduced his 'low-energy' '*Standard Higgs / string / snare Particle Model*' 2014. This model includes only one energetic level and results in only four elementary Higgs particles; a) two *super-symmetric* Higgs of the proton and b) two *super-symmetric* Higgs of the electron. The origin of the most elementary mass (m), charge (L) and magnetic spin (M) of these Higgs have been deduced and completed quantitatively.
- 10) These four 'low-energy' elementary Higgs particles are not found between the collision products of 'high-energy' particle accelerators!
- 11) From these four elementary Higgs by **Uiterwijk Winkel**, majorana particles like neutrinos and photons (**F1b**) are constructed. These majorana particles are real particles without measurable mass and electric charge. Ultimately, only the protons/electrons are constructed from the neutrinos and photons (**F1c**).
- 12) The transition from 'mass' \leftrightarrow 'matter' occurs by adding $E = \frac{1}{2} mc^2$ rotational energy to these proto-protons and proto-electrons as constructions of neutrinos and photons (**F1c**). In the universe the complete reconstruction process takes about 14 – 18 billion years. During this period all emitted neutrino's and photons are transformed again into protons and electrons and finally into hydrogen atoms. See **Documents F1a 2014, F1b and F1c**. (As a result of this, the universe older than 14 billion years, can no longer be observed).
- 13) The documents published on www.uiterwijkwinkel.eu cover a large part of the 25 questions raised by **Gross**. Based on this new information, the author is able to answer the 25 questions which will hopefully be enough to put these questions back in the spotlight.
Gross and the Sciences should become more aware and interested in order to take action in rectifying the foundation of Science!

4.1 WHY THE THEORY OF RELATIVITY IS INCORRECT AND $E = mc^2$ NOT APPLICABLE:

The most basic error in the theory of physics, concerns *Einstein's Theory of Relativity* and the general use of his formula $E = mc^2$ where $m = \text{mass}$. This formula is, *quantitatively*, only valid for annihilation. The rejection of the *Theory of Relativity* might sound absurd to you as, in recent years, Science has increasingly supplied more 'evidence' that apparently confirms this theory where mass is equal to energy and time is linked to space.

Einstein's theory is becoming more and more embedded in the foundation of Science and seems to have become absolute!

In **Document G5** the author describes at least 7 errors in the principles of the Theory of Relativity and, thus, in the resulting *Big Bang Theory*. The Theory of Relativity also resulted in erroneous definitions regarding the basic concepts of gravity, space and time. The author believes that the Theory of Relativity is *incorrect* for the following reasons (explained briefly):

1) Einstein used the wrong formulas:

Einstein's Theory of Relativity is based on the formulas deduced by **Maxwell** as well as on the **Lorentz** transformations. However, these formulas concern electrons which experience a rotating movement in a coil. Electrons are particles of *complete matter* (mass + $E = \frac{1}{2} mc^2$ kinetic rotational energy).

In the Theory of Relativity, **Einstein** upgraded and extended **Maxwell** and **Lorentz's** formulas by applying it to linear movements and all forms of mass / matter and particles, also on a *sub-atomic level*. **Einstein** should not have extended **Maxwell's** formulas to the linear movements of all particles with mass. This was a fundamental mistake.

As a result, **Einstein** wrongly expanded these coil formulas to linear movements. In doing so, the point of departure for his Theory of Relativity can also be considered as incorrect. Furthermore, the **Lorentz** transformation is an inaccurate basis to present the relationship between space and time. Thus, the formulas are mistakenly used as a basis for deriving the *Theory of Relativity*.

Conclusion 1: **Einstein** started by extending the formulas of **Maxwell** and **Lorentz** incorrectly, and therefore applying the wrong formulas.

**2) In the universe, theoretical considerations apply to: a) a fixed point of observation,
b) a fixed starting moment of time and
c) a fixed starting point of space:**

a) When deducing his *Theory of Relativity*, Einstein assumed that he was free to choose the point of observation. He even took the liberty to move this point of observation. Both acts are fundamentally inappropriate and not allowed. The universe has only **one fixed center C**, which is also the point where the last Little Bang occurred approximately 40-45 billion years ago. This *center C* is exactly the same point where all preceding super cold *Little Bangs* occurred and where in future all super cold *Little Bangs* (0 Kelvin) will take place.

The *center C* in the universe is one single point with a physical size of, at most, a few cm to a couple of m. Center **C** is also the only point in the universe where, oddly enough, there is never any matter present. Up and until the formation of hydrogen, it is clear that the universe develops from center **C** and is uniform on all sides and consists of an expanding universe-spherical-shell made up of mono-layers of protons and electrons.

Hydrogen is only formed 5 - 10 billion years after this Little Bang when the universe has already expanded without atoms and without gravity over a distance of 2 - 2.5 billion light-years.

For *pure theoretical* considerations, such as the *Theory of Relativity*, it is only allowed to make observations from this center **C** of the universe, and not from any other point in the universe!

b) Time (the universe clock time) started at the moment the Little Bang took place 40 - 45 billion years ago with $t = 0$ and the exact moment that the foregoing universe ended and the new universe started. The 4 - 20 billion galaxies started with their own Big Bang about 20 - 25 billion years ago. The universe looks like a round and uniform balloon.

(Because of the enormous radius the universe, when observed, presents itself as a relative thin flat layer!)

c) Time and space start simultaneously from the same center **C** of the universe! After the super cold Little Bang (**G6**), all particles of matter (only protons and electrons) always start with exactly the same universe clock time! Distorting the universe clock time - either faster or slower - is impossible. (Two identical atomic clocks at different speeds in the universe result in an understandable difference in *measured* time! Should one bring that clock back to earth it will show exactly the same time again!)

Conclusion 2: Based on *pure theoretical* considerations such as the theory of relativity, one is only allowed to make the observation(s) from this fixed center **C** of the universe. No other points in universe are allowed! Point **C** is the center and absolute zero point of this universe and all the other preceding universes.

Conclusion 3: This point of observation may not be moved yet, this was exactly what **Einstein** did!

Conclusion 4: With **C** as the only fixed point of observation the Theory of Relativity fails completely.

3) Mass is not equal to energy; mass is purely the result of kinetic energy:

In **Document F1a 2014** the *Standard Higgs Particle Model* of **Uiterwijk Winkel** is described. All *ordinary matter* and all *black hole matter* in the universe is based on only:

- two *super-symmetrical* 'low-energy' Higgs mass particles of the proton and
- two, also, *super-symmetrical* 'low-energy' Higgs mass particles of the electron.

As a result of the rotation (= kinetic energy) around the longitudinal axes and around the two front axes, three distortions occur to the most elementary Higgs / string / snare particles.

To combat the three distortions the four Higgs particles generate the four most basic physical characteristics of:

- a) mass or anti-mass,
- b) a positive or negative electric charge, and
- c) parallel or anti-parallel magnetic spin \downarrow or \uparrow .
- d) minimum spatially volume

Without kinetic energy there is no rotation and no distortion, so there will be no mass, no charge no spin and no volume! Than the most basic features of mass, charge spin and volume are completely absent!

Mass, electric charge magnetic spin and volume are solely driven by kinetic energy and the resulting rotations and distortions of the Higgs particles! See **Figures 1 – 6 document F1a 2014**.

4) No annihilation possible on the Higgs /string / snare level:

The two super-symmetrical Higgs particles are each other's anti-particle. Both particles and anti-particles as well as the mass and anti-mass of the proton cannot annihilate each other! This also applies to both the Higgs particles of the electron! **Mass is the result of kinetic energy.**

Mass is not equal to energy as Einstein pointed out in the Theory of Relativity!

Conclusion 4a: Mass, charge spin and volume/space are solely driven by kinetic energy, as the result of the rotations and distortions of the elementary Higgs particles.

Mass, charge, spin volume/space and kinetic energy form a fixed unit of five!

Conclusion 4b: Higgs particles with purely mass are not possible! Pure energy without mass, as **Einstein** assumed and suggested, does not exist!

Conclusion 5: Mass (+ charge ,spin, volume) is *not equal* to energy as claimed by the Theory of Relativity.

Conclusion 6: During annihilation matter is not turned into pure energy, but into photons (majorana particles) (**F1b**) which have not lost any mass, charge and spin. These are not measurable anymore.

Conclusion 7: **Einstein's** formula $E = mc^2$ cannot be applied as is.

Currently (2016), Science is still accepting the principal that mass equals energy. However, this is false!

5) Mass cannot be transformed into pure energy:

The abovementioned facts indicate that mass cannot be transformed into energy or photons!

Therefore, **Einstein's formula** $E = mc^2$ is not correct regarding $m = mass$.

In reality, pure energy is always real particles in the form of neutrinos and photons. These are *majorana particles* (**F1b**) that are composed of an equal number of Higgs and anti-Higgs particles. The photons and neutrinos are real constructions of the Higgs / string /snare particles. Because of their specific structure these majorana particles have no measurable mass, charge spin and volume.

They do have a measurable oscillation frequency and therefore, a measurable kinetic vibration energy. For this reason, photons appear to be pure energy which is very deceptive. In reality neutrinos and photons are real particles.

Conclusion 8: Pure energy as **Einstein** and Science proposed, is impossible. What is possible, is energy in the form of neutrinos and photons (majorana particles).

The formula $E = mc^2$ is thus incorrect regarding $m = mass$.

6) With annihilation, mass is not transformed into pure energy:

During the annihilation of equal matter and anti- matter, it only results in photons (real majorana particles, **F1b**).

The amount of rotational energy released with these photons (matter-less) particles is equal to the formula $E = mc^2$. With this annihilation no mass is converted into energy! Annihilation only applies to Einstein's formula quantitatively. See **document F1b** for the structure of *majorana particles* such as neutrinos and photons. See especially **Figure 15 document F1c** for a visual representation of annihilation.

The neutrinos and photons, released during annihilation, have lost all characteristics of matter but none of their mass. The mass, charge and spin within these photons (**Fib**) is, for obvious reasons, no longer measurable on the outside of the majorana particles such as neutrinos and photons.

During annihilation all mass, charge and spin remain completely intact and nothing has been converted into pure energy. With annihilation of equal matter / anti-matter, it is converted into neutrinos and photons only!

Conclusion 9: The total conversion of matter/mass into pure energy and vice versa cannot happen. The formula $E = mc^2$ of **Einstein** is fundamentally wrong!
During the annihilation of equal matter / anti-matter, mass is not converted into pure energy.

Conclusion 10: During annihilation 0% of the present matter / mass is converted into pure energy. This matter / anti-matter is only converted into majorana particles / photons without any *measurable* mass, electric charge magnetic spin and volume!

During the annihilation of *matter / anti-matter*, it is only stripped of its rotational speed around its own axis with the speed of light. Matter/anti-matter and is 'degraded' to matter-less and *seemingly massless* photons, moving linearly at the speed of light c . During annihilation of two opposite rotations at the speed of light, kinetic energy of $\frac{1}{2} mc^2$ disappear which results in released energy of $2 \times \frac{1}{2} mc^2 = mc^2$. This is settled quantitatively through the formula $E = mc^2$ for $m = \text{matter / anti-matter}$.

Annihilation, therefore, only applies to **Einstein's** formula $E = mc^2$ **quantitatively!**

Conclusion 11: The formula $E = mc^2$ applies only *quantitatively* for annihilation without any conversion of mass into energy! $E = mc^2$ can be directly deduced without applying the Theory of Relativity!

Conclusion 12: The complete conversion of *mass or matter* into pure energy is, fundamentally, not possible. The formula $E = mc^2$ of **Einstein** is fundamentally incorrect for both $m = \text{mass}$ as for $m = \text{matter}$.

Conclusion 13: With the Theory of Relativity and formula $E = mc^2$ of **Einstein** commonly used in Science, it has actually misled the world of Science for more than a century. As a result, there are a number of very basic mistakes/errors present in the foundation of Science.

Conclusion 14: Matter, during annihilation, only converts to photons with their *mass, charge spin and volume*. **Einstein's** formula does not apply substantively but only *quantitatively* for annihilation and regarding $m = \text{matter / anti-matter}$.

7) In particle accelerators $E = mc^2$ cannot be used in order to determine the mass of particles:

Energy manifests itself mainly in the form of photons. Energy, by definition, is always, and remains, linked to mass and matter present as Higgs particles with their mass, charge spin and spatially volume.

Prior to the collision in particle accelerators, a large amount of kinetic energy was added to the colliding particles. During the collision this kinetic energy is partially converted to the breaking of bonds inside the colliding protons / atoms.

At the moment of the collision a significant part of the kinetic energy is used to increase the rotational speed of all Higgs particles present inside the colliding particles. After the collision and break-up of the particles, the

- a) mass,
- b) the electric charge,
- c) the magnetic spin,
- d) the spatially volume and
- e) the *joint quantitative* kinetic energy in almost all existing Higgs, have increased temporarily.

In mass spectrometry this synchronous increase in mass, charge and spin results in a much higher value for the measured and calculated mass! In reality, the actual mass is much lower than measured! In experiments done on particle accelerators, $E = mc^2$ cannot be applied to measure the real mass of particles!

In the particle accelerator $E = mc^2$ may not be applied to translate the *measured energy* of the elementary particles into the *mass* of these particles in terms of GeV.

Conclusion 16: Determining the mass of elementary particles in particle accelerators using $E = mc^2$ is based on incorrect assumptions.

Conclusion 17: Mass spectrometers are, in principle, unsuitable for the calculating of the mass of elementary particles in particle accelerators.

Conclusion 18: The universe did not start with a *Big Bang!*

8) From the four Higgs / string / snare particles by Uiterwijk Winkel, only the proton / electron, hydrogen and the elements of the periodic table can be constructed:

The author distinguishes only one 'low-energy' elementary level with 4 Higgs particles. These 'low-energy' Higgs rotate at a *fixed* rate and, therefore have a *fixed* amount of mass and a *fixed* amount of charge spin and spatially volume. These 'low-energy' Higgs should not be confused with the 'high-energy' mass Higgs particles found at the LHC at CERN that only possess mass! (Such pure mass particles are impossible!)

The four 'low-energy' Higgs will not be found between the 'high-energy' collision products in particle accelerators. The particles which are released are assigned three, much higher, energy levels of:

a) up-down, b) charm-strange and c) top-bottom than is the case with the simple four (theoretical) Higgs by **Uiterwijk Winkel**.

Only neutrinos and photons can be constructed from the four 'low-energy' Higgs (**F1b**). From these neutrinos and photons only the anti- proton and the anti- electron can be build (**F1c**). From these basic building blocks only the hydrogen atom / molecule can be formed.

In **Document F1d** is deduced that only the elements / isotopes of the periodic system / table can be formed from hydrogen because of the speed of the atoms in the universe during a nuclear fusion. The periodic table is identical throughout the universe. All the physical, chemical and mechanical forces of the periodic table are the same throughout the whole universe!

9) All neutrinos / photons possess mass, charge magnetic spin and volume which are, quantitatively, practically zero:

All Higgs particles possess mass / anti-mass apart from their standard electric charge magnetic spin and volume. The resulting neutrinos and photons consist of as many Higgs / string /snare particles as anti-particles. Neutrinos and photons (majoranas) therefore have no measurable mass, charge magnetic spin and volume but the quantitative values of the mass, charge and spin are not exactly zero either.

All neutrinos and photons in the universe react in an extremely small degree as a result of the:

- a) electric and magnetic fields that are present within the universe-spherical-shell and the emanating of stars and galaxies,
- b) deflection in their path due to the presence of extremely low concentrations of pure hydrogen between the galaxies. Extremely low concentrations of hydrogen and helium are present within the galaxies.

This results, in all conceivable neutrinos and photons, in a combination of an extremely small attraction as well as an extremely slight refraction and curving in the hydrogen/helium gases. This leads to minor difference in their original straight path.

The author estimates that this deflection averages only one degree per *10 - 40 thousand years*. It is almost impossible to measure such a slight deflection quantitatively. This minimal deflection is, however, enough to ensure that all the neutrinos and photons continue to move within the thin universe-spherical-shell with a radius of 3,0 – 3,6 billion light years and are unable to leave the shell. (This enormous radius also results in a flat universe!) This minimal deflection ensures a closed universe for all particles with mass, matter charge, spin and kinetic energy! See **Document G9**.

Conclusion 19: Due to the minimal deflection, the universe is a closed system for all

- a) mass / matter,
- b) electric charge,
- c) magnetic spin
- d) volume and
- e) kinetic energy that are present!

Conclusion 20: As a result of these tiny deflections, all objects observed in the deep universe are in reality in a thin universe-spherical-shell which, as such, is not visible and cannot be observed from earth.

Conclusion 21: All detected objects are therefore in entirely different places when observed from the earth. The deep universe only shows itself on earth through complete virtual images.

10) Transition from mass to matter; reformation of matter from photons and neutrinos:

Under the influence of their electric and magnetic fields, which exist in the universe on all neutrinos and all photons of the proton and the electron, majorana particles are formed as neutrinos and photons.

These majoranas develop into the structures of proto-protons and proto-electrons during a period of approximately 14 – 18 billion (10^9) years. For this long- term building process, see **Document F1c and Documents G7 / G8**.

(In the meantime, all the older photons are transformed into protons or electrons and transformed into hydrogen again! This is the reason why the older universe cannot be observed anymore!)

During this period of 14 – 18 billion years, the rotational speed of the *proto-protons* and *proto-electrons* around their own longitudinal axes, continues to increase until it reaches the speed of light c . Then, the rotational energy equal to $E = \frac{1}{2} mc^2$ is added to these proto-structures of protons and electrons. With this energy the proto-protons and proto-electrons transform into real protons and real electrons with the *characteristic of matter (proton) and anti-matter (the electron)*. See **Document F1c**.

The basic building blocks of the atom have a *measurable amount* of: a) mass, b) charge, c) magnetic spin and d) kinetic energy again! Through the movement in the universe, the protons, electrons, atoms and neutrons cannot exceed the speed of light c !

This automatic reformation of protons and electrons, through electromagnetic radiation, is true and applies to all the neutrinos and photons in the universe. This transformation process into protons and electrons takes approximately 14 - 18 billion years to complete. All radiation and related information about the universe, older than 14 - 18 billion years, have vanished and have been completely transformed into protons / electrons and converted into hydrogen. All older information about the universe has thus been completely destroyed!

We cannot look back into the past of the universe further than about 14 - 18 billion years ago! That is our ultimate horizon of the universe. However, in **Documents G6, G7 and G8**, the author has managed to distinguish 22 steps/phases of the cycle of the universe in the previous, not visible and observable, period!

Conclusion 22: From photons of light (the electron) and infra-red photons (the proton) only protons/electrons and hydrogen can be formed, and nothing else. See **Figure 15 of Document F1c**.

Conclusion 23: Matter arises only when proto-proton and proto-electron are rotating at the speed of light c and $E = \frac{1}{2}mc^2$ energy is added.

Conclusion 24: The visual perception / horizon of the universe has a maximum of about 14 – 18 billion light-years. From the earth, the horizon of the universe within the universe-spherical-shell, has a maximum of about 14 – 18 billion light-years. This horizon cannot be stretched!

11) Einstein's idea about the origin of gravity is not correct:

Both **Newton** and **Einstein's views** (through the Theory of Relativity) about the *origin* of gravity by linking gravitation directly to *mass* and later to the mass of the atom core, were incorrect. *Loose protons and electrons do have mass but do not generate any form of gravity!*

Gravity is exclusively generated by all 'shell' electrons and all 'shell' electron pairs of atoms and is only generated when the atom undergoes:

- 1) *movement / speed* in the universe relative to the center **C** of the universe,
- 2) *movement / speed* relative to the rotation centers **RI** of galaxies and
- 3) their own rotational speed.

Speed causes deviations in the orbits of all 'shell' electrons and the electron-pairs of atoms. They object to and fight these deviations by generating forces such as gravity, physical forces and chemical forces (**E3-1, F1d**)

The bigger the speed in relation to **C** and the **RI**s of galaxies and the bigger their own rotation:

- a) the bigger/smaller the emitted *linear* gravitation 'radiation' and
- b) the bigger / smaller the other quadric physical and chemical forces because these forces are related to kinetic energy.

Ad a) Gravity manifests itself as a radiation force without any mass, charge, spin volume and energy and is emitted with infinitive speed through the universe.

Any form of speed / rotation of the atom in universe creates its own deviation and generates its own gravitational component / vector!

Only equal vectors / components attract each other. (Vector- / Components law by **Uiterwijk Winkel**)

Conclusion 25: Gravity is not generated by the mass or matter in the atom nucleus. Gravity is only generated by the 'shell' electrons of atoms in combination with the velocity of the *atom* in the universe relative to center **C** of the universe, the centers **RI** of galaxies and their own rotational speed.

Conclusion 26: Each form of velocity in the universe relative to center **C** generates its own (gravitational) force vector / component. Only equal vectors / components attract each other mutually. Different vectors are completely indifferent to each other.

Ad b) The other physical and chemical forces react the same but these forces are related to kinetic energy and thus quantitatively quadric to speed(s). Any form of speed / rotation creates its own deviation and kinetic energy on the 'shell' electrons and generates its own force component / vector! Only equal vectors / components attract each other and form physical or chemical bonds. (Vector- / Components law by **Uiterwijk Winkel**)

Each physical and chemical bond on earth is constructed from as many underlying vectors as the speed of the earth in the universe. (This is the key to solving the current problems in quantum mechanics). The speed of the earth in the universe can be derived from every physical or chemical bond.

12) With the speed of an atom in the universe, the mass does not increase / decrease but its gravity:

With the increasing or decreasing of the speed / rotational speed of the atom in the universe, *the mass generated by the Higgs will always stay constant*. Only the quantity of the *gravitational* radiation emitted by the 'shell' electrons of the atom increases or decreases!

Looking at it from the outside it seems, deceptively so, as if the mass of the atom increases or decreases with the speed! But the original mass, however, stays the same. Mass, charge and spin are the most fundamental physical characteristic of matter (See **Document F1a 2014**). Except for collisions in particle accelerators, mass cannot be influenced or changed by speed. Mass is independent of the speed of a proton or electron in the universe. In the Theory of Relativity, **Einstein**, in fact, switched the concepts of *gravity and mass* with each other. This has resulted in errors and incorrect interpretations.

This is a fundamental mistake. Particle physics and Astrophysics are, currently, based on these errors in the Theory of Relativity and the resulting *Big Bang theory*.

These mistaken theories have resulted in the incorrect scientific views on many aspects of Science i.e.

- 1) the universe,
- 2) the nature of black holes,
- 3) gravity,
- 4) the notions of time and space
- 5) 'dark mass / matter' and 'dark energy',
- 6) the forming of 'scientific' myths around the beginning of this universe, black holes and
- 7) the existence of wormholes in time and the universe.

13) The LIGO project did not measure the effect of gravity but the waves of gravitational energy:

In 2016, the **LIGO** science project believes that they have detected gravitational waves! However, this is not the case! Gravity is a phenomena without any characteristics of mass, charge, spin volume and kinetic energy. The effects of gravity moves with *infinite speed* through the universe. Gravity does not manifest itself through waves!

Therefore, in the **LIGO** project, no gravitational waves were measured but only waves of sudden changes in the gravitational energy! Contrary to gravity (no waves, not limited to matter, infinitive speed), the waves of gravitational energy are transported through matter (atoms) and therefore are limited to the speed of light *c*! These waves pass through the universe-spherical-shell with extremely low concentrations of hydrogen molecules and helium atoms!

Gravity itself is not visible nor directly detectable / measurable. Only the effects of gravity such as the as gravitational energy are measurable. The direct mutual gravitational effects of the sun, earth and moon would constantly and completely disturb the **LIGO** project.

14) Black holes are, as a rule, super cold at about 0 - 2.7 degrees Kelvin; they cannot emit light:

According to the scientific vision (2016) the enormous gravity of black holes prevents photons of light and infra-red to escape from a black hole / compact celestial body. Photons, neutrons and neutrinos, however, do not generate gravity! Therefore, neutrinos, neutrons and photons are completely insensitive to the enormous gravity of a black hole; only atoms are sensitive to it!

With atoms in a black hole state, their electron shells collapse to close to the nucleus (**F1e + Figures 18a – 18n**). The atomic nuclei of these black hole atoms have practically no space left to vibrate. Therefore, all compact / black hole atoms and black holes / compact celestial bodies have a fixed temperature close to 0 - 2.7 Kelvin (**F1e**). These celestial bodies are all extremely cold! As a result of this standard and extremely low temperature, black holes cannot emit light! This phenomena does not have anything to do with gravity.

When the electron shells collapse, the kinetic vibrational energy of the atomic nucleus is transformed to the angular velocity of the collapsed 'shell' electrons close to the atomic nucleus. The 'shell' electrons of black hole atoms accelerate to close to the speed of light c . During the collapsing all electron pairs present, fall apart into loose 'shell' electrons. In this way the Van der Waals / London force of the electron pair disappears again. The 'shell' electrons, moving at the speed of light c , cannot move to other orbits of the atom anymore. This is the second reason why black hole atoms and black holes cannot emit light or infra-red photons nor can these compact celestial bodies absorb radiation from outside! Black holes and all compact celestial bodies are therefore perfect mirrors!

The gravity of black holes / compact celestial bodies cannot distort the universe clock time locally nor can it distort space! In the universe-spherical-shell all places always have exactly the same *universe clock time*! The universe / the universe-spherical-shell seems to be flat but, in reality, this universe-spherical-shell is slightly curved in the shape of a balloon with a radius of about 3 billion (10^9) light-years. See **Document G2** about time and space.

Conclusion 27: The black hole atom and all the black hole / compact celestial bodies are super cold and therefore cannot emit light or infra-red radiation nor can they absorb this radiation from outside. All black holes are perfect mirrors!

Conclusion 28: The fact that they cannot emit light, has absolutely nothing to do with gravity! Black holes are normal celestial bodies with an enormous rotation (gravitation) and they are super cold.

Conclusion 29: Black holes are not able to distort the time (the universe clock time) nor to bend or curve time and space locally. The thin universe-spherical-shell is, by definition, curved.

15) Origin of high-energy cosmic rays:

The 4 - 20 billion (10^9) *hydrogen supernovas or Big Bangs* occurred, almost simultaneously, about 20 -25 billion years ago. In the center of these supernovas, the various elements and isotopes of the periodic table were formed - up to and above number 92. These isotopes and higher elements are inherently unstable.

Due to the enormous rotational / angular speed in the center of the fusion area, enormous van der Waals / London forces are generated by all electron pairs present in the electron shells of the atoms that were created by the nuclear fusion. The van der Waals / London force forms van der Waals / London bonds within these newly formed electron shells of all atoms \geq Be. The forming of these bonds occurs:

- a) within all electron shells as well
- b) between the different electron shells of one atom.

Because of these van der Waals / London bonds created in the atoms \geq beryllium, all electron shells collapse towards the nuclei of these atoms. This process transforms normal atoms into black hole atoms. See **Document F1e + Figures 18a - 18n**.

The center of this fusion area is directly transformed into the current central black hole of the galaxy. The central black hole of galaxies, therefore, contains many unstable and highly radioactive elements, isotopes and atomic nuclei. The central black holes are present in the center of all galaxies.

Approximately 20 - 25 billion years ago, these central black holes of galaxies contained all kinds of unstable *black hole* atoms up to no. 92 and higher. The radioactive decay and stabilization of the unstable black hole atoms, are however seriously hampered because all nuclei are trapped inside their electron shells where the 'shell' electrons rotate around their nuclei close to the speed of light c .

The nuclei of all black hole atoms are literally trapped within an almost impenetrable cocoon of 'shell' electrons moving at a superfast speed. Therefore, it is extremely difficult for the decayed products of the atomic nucleus to escape.

Conclusion 30: Stabilization of black hole atoms only occurs when:

- a) the atoms are located on the outside of the black hole, and
- b) if the core particles have an enormous amount of kinetic energy.

Conclusion 31: We observe these 'high-energy' particles as cosmic radiation.

16) The concept of time and space:

The Theory of Relativity unfortunately results in mistaken ideas with respect to time and space. See **Document G2** www.uitewijkwinkel.eu. Time and space are not independent parameters/dimensions as they are currently used in physics. The dimensions of time and space, throughout the universe, are both directly linked to the unwinding of the cycle that the universe, as a whole, passes through. See **Documents G7 and G8**.

On the scale of the universe, time and space form one combined and directly interrelated parameter. Due to this direct link, all particle matter in the universe always possess exactly the same 'universe clock time'. The universe / the universe-spherical-shell and especially the cycle of the universe have, fundamentally, no differences in the universe clock time. (Differences in measured time will only occur when identical atomic clocks have different speeds in the universe! After returning to earth, this clock will give the same time again!) In the universe and during the cycle of the universe there are no differences in time! All particle matter and forms of radiation always have exactly the same universe clock time!

In the Theory of Relativity, **Einstein** suggests that differences in time (the universe clock time) are possible. That is at odds with the completion of the cycle of the universe that repeats itself endlessly. Differences in time, as **Einstein** introduced, would disrupt and block this cycle of the universe completely.

Conclusion 32: In the universe, differences in the universe clock time, are basically impossible.

Conclusion 33: The space of the universe is constructed as a thin 'universe-spherical-shell' containing about 4-20 billion galaxies with a radius of about 3 billion light-years. This space is curved. This curvature of space is not caused by gravitation.

Conclusion 34: Between the galaxies in the 'universe-spherical-shell' an extremely low concentration of hydrogen is present. Within the galaxies extremely low concentrations of hydrogen and helium are present. These gases ensure that all radiation remains within the universe-spherical-shell.

17) Main conclusions:

The author is of the opinion that there are more than enough reasons to reject the Theory of Relativity completely and fundamentally, regardless of his respect for **Einstein**! See **Document G5**.

Currently (2016) the main obstacles in the development of science, are:

- The *Gravitational formulas* of **Newton and Einstein** without adding *cos α* as proposed by **Uiterwijk Winkel / Roos**;
- **Einstein's** Theory of Relativity where mass and energy is considered equal,
- The curvature of time and space through gravity,
- The formula $E = mc^2$ applied as $m = mass$,
- The *Big Bang theory* derived from the Theory of Relativity.

According to the author, these mistakes and obstacles should be rectified as soon as possible.

4.2 SCIENCE CONTRARY TO THE AUTHOR'S TOTAL VISION:

Apart from the Theory of Relativity, the answering of the 25 questions raised by Gross, results in the revealing of even more basic mistakes – approximately 13 – which are present in the foundation of science! See **Document J2**. This is almost unthinkable and unbelievable, yet sadly true!

These errors manifest themselves in the absence of real explanations for the phenomena such as:

- a) gravity (the **LIGO** project only measured waves of gravitational energy),
- b) 'dark mass / matter' and
- c) 'dark energy'.

The vision and documents by the author which are published on www.uitewijkwinkel.eu leads to a violation of the status of many scientists.

Invisible wall:

In trying to have his vision accepted, the author has encountered a wall of reluctance and opposition. For the majority of scientists it will be difficult, if not impossible, to distance themselves from the currently embedded errors in science (**J2**).

These mistakes / inaccuracies have already been present in scientific literature for many decades and thus in the foundation of Science. They have been accepted and adopted and therefore, in time, have become anchored in this foundation!

Adapting the foundation of Science:

The author believes that, sooner or later, his visions will result in changes to the foundations of Science, but with far-reaching consequences. However, he believes that these changes are a task that the Science must take upon themselves.

***5) 25 ANSWERS TO THE 25 QUESTIONS RAISED BY DAVID GROSS:**

The author was not able to find the original questions, raised by **David Gross**, on the internet. The author repeatedly requested **David Gross** to send the original 25 questions via email. When David Gross did not respond, the author found a shorter version of the questions on the internet which he has used in this document. In the following chapter, the author attempts to give answers to the 25 questions.

Question 1: The origin of the universe:

Was there a Big Bang, was this preceded by a Big Crunch, ...?

Answer: The universe did not start with a superhot Big Bang 13.8 billion years ago but started approximately 40 – 45 billion years ago with a super cold Little Bang. Almost 20 – 25 billion years later, the 4 – 20 billion galaxies started at the same moment with their own superhot Big Bang. The previous universe did not end with a Big Crunch but with a super soft Crunch!

-) The universe passes through an energy-neutral cycle of 29 phases/steps during a period of about 2 – 3 trillion (10^{12}) years:

The universe passes through an energy-neutral cycle consisting of 29 steps / phases. One cycle takes about 2 - 3 trillion (10^{12}) years to complete, though it could be more. See **Documents G6 (Little Bang), G7 (Cycle of the universe) and G8 (Figures)** www.uiterwijkwinkel.eu.

At the end of this universe the next universe will begin with exactly the same cycle and will start with the same number of protons / electrons and kinetic energy. Each cycle is completed in exactly the same 29 phases and same time.

-) The cycle of the universe can be mathematically modelled and therefore quantified in detail:

The 29 phases/steps in the cycle of the universe by **Uiterwijk Winkel**, are based on the 12 parameters of the universe (**G3**) and on the nine laws of the universe (**G4**). The 29 phases/steps pass from one step to the other in a fairly smoothly. All 29 phases/steps can be modelled mathematically, and therefore, also the whole cycle of the universe.

With this mathematical model, the past (40 – 45 billion years) of this universe as well the future of the universe can be completed qualitatively as well as calculated *quantitatively* and in detail. The conditions and limits within which such a cycle occur can also be completed *quantitatively*!

-) The cycle of the universe in a 'nutshell':

There was no single superhot Big Bang. The 4 - 20 billion galaxies started about 20 - 25 billion years ago, each with their own Big Bang. The billions of Big Bangs occurred at almost exactly the same moment. The billions of Big Bangs occurred in **phase 16** of the cycle of the universe. Before the billions of Big Bangs were formed, there was a period of about 25 – 20 billion years wherein the **15 earlier phases / steps** can be distinguished.

We are now in **phase 23** of the cycle of the universe which consists of, in total, 29 phases. In the future, through gravity, the universe will continue to expand slower and slower. (As a result of the balloon form, the universe seems to expand faster and faster when looking back in time, but this is quite deceptive). In about 350 - 450 billion years from now, the universe-spherical-shell will reach its maximum expansion of 2.5 – 3.5 billion (10^9) light-years in relative to the center C of the universe.

At that time, all the galaxies and all the energy which they have emitted will again be fully integrated into one of the central black holes. In the future, through the collision of the galaxies, the current 5 – 9 velocities of the galaxies (and of the earth) will disappear and will be transformed into only one rotational speed of the super black holes which will be formed

These final super central black holes will contain $2^5 - 2^9$ current galaxies. With every step of the collision, one speed in the universe disappears. At the end only one angular speed remains.

During this period of 350 – 450 billion years the neutrinos and photons that have been emitted will be reconstructed into:

- a) protons, electrons,
- b) hydrogen,
- c) the elements of the periodic table through the fusion of stars, and
- d) black hole atoms which are absorbed in the central black holes of one of the billions of galaxies.

No neutrino or photon escape out of the universe!

After the moment of maximum expansion under the influence of gravity, the universe-spherical-shell with only super black holes, will start shrinking again. During the shrinking of the universe, the acceleration of the shrinking speed is continuously slowed down until it reaches a constant speed. This occurs because the contraction speed is totally opposite to the rotational speed of the central black holes. All galaxies rotate in the same direction!

At the end of the ever slower contraction of the universe, the central black holes do not rotate anymore. Therefore, the universe will not end with a Big Crunch but with a super 'Soft Crunch'.

The universe always goes through the same cycle / *Taeutycle* of 29 consecutive phases/steps. Each cycle of the universe starts and ends with a *super cold Little Bang* at 0 degrees Kelvin and, strangely enough, without any form of direct explosion. See **Document G6 + figures**. Due to the special properties of gravity / gravitational energy, the cycle of the universe is completely energy-neutral. The cycle of the universe repeats itself infinitely.

-) The formation of a Little Bang black hole at the end of the cycle of the universe:

At the end of the previous universe, and under the influence of gravity, the 4 - 20 billion giant central black holes, formed as a result of the collision of approximately 32 or (2^5) of the current galaxies, came together at the **center C** of the universe at exactly the same time.

This resulted in the formation of the Little Bang black hole. On their way to C, the rotational speed of all the super central black holes which were formed, continued to decrease which caused their own rotation and their own gravity and gravitational energy to also decrease.

The loss of gravity also results in the decrease of the stability of the 4 - 20 billion super central black holes. The super central black holes which are no longer rotating, eventually merge into one, non-rotating, Little Bang black hole with center **C** exactly in the center. At the end of the coalescence of the super black holes, the velocity and gravity of this growing Little Bang black hole decrease to close to zero.

This is impossible when you consider that mass is directly connected to gravity.

For an explanation of the phenomenon gravity / gravitation see **Documents E3 and E3-1**.

Through the loss of gravity, the *Little Bang black hole*, which has been formed, becomes increasingly unstable since the electron-shells of the existing black hole atoms mutually repel each other. Inside the black holes this results in a tremendous electric spring tension. The black hole atoms and black holes are only kept together by gravity!

A few seconds before the contraction of the universe is fully completed, there is a super large Little Bang with a radius of approximately 50 - 100 million km. The shrinking speed and, therefore the gravity of this Little Bang black hole, approaches zero! At some point it falls below the *Critical black hole gravity (Cribhgra)*. (*Cribhgra* is equal to the smallest known black hole / compact celestial body in universe).

When *Cribhgra* is reached inside the black holes, the mutual electric repelling of the black hole atoms becomes larger than the remaining gravity which kept these black hole atoms locked up inside the Little Bang black hole. At the moment when *Cribhgra* is reached, the newly formed Little Bang black hole falls apart entirely. At first it falls apart into loose unstable black hole atoms and ultimately into an *equal number of protons and electrons*. See **Document G6 and Figures**.

-) The universe starts with a super cold Little Bang:

The formation of the *Little Bang black hole* is a controlled ending of the contraction of the universe that ended in a 'super soft Crunch'. The contraction of the universe took approximately 2 - 3 trillion (10^{12}) years or more to be completed, while the total expansion took about 0.5 trillion (10^{12}) years. (By modeling the cycle of the universe, these periods can be exactly deduced up to a million years).

-) This requires further explanation:

The *current Big Bang theory* is based on the Theory of Relativity. In **Document G5** the author explains why **Einstein's Theory** and $E = mc^2$ are incorrect with regards to $m = mass$.

-) Einstein's pure energy does not exist; energy manifests itself in the form of photons:

Pure energy does not exist on earth or in the universe. All energy exists in the form of photons of light and infrared radiation. These photons are majorana particles (**Document F1b**). The majorana particles (neutrinos and photons) are constructed from the four most elementary Higgs particles (**F1a 2014**). Neutrinos and photons are real particles and they have a fixed spatial structure with a fixed amount of mass, charge, spin and kinetic energy.

All majorana particles are constructed from the same amount of common Higgs particles and anti-Higgs particles which cannot annihilate each other! (Mass is not equal to energy, mass is just the result of kinetic energy). The measurable mass (m), electric charge (L) magnetic spin and volume of these majorana particles are zero. Inside the neutrinos and photons the mass, charge and spin are indeed still present but they are not measurable on the outside of the particles!

Therefore, converting mass into pure energy, as **Einstein** indicated, is absolutely impossible. (The formula $E = mc^2$ only applies quantitatively to the annihilation of equal matter and anti-matter). The Theory of Relativity with its accompanying formula $E = mc^2$ where $m = \text{mass}$ are the biggest mistake in the foundation of physics. The *Big Bang* did not occur according to **Einstein's** $E = mc^2$.

-) How did this universe start?

-) The outline of the cycle of the universe:

In the documents published on www.uitewijkwinkel.eu, Documents **G6 (Little Bang)**, **G7 (Cycle of the Universe)** and **G8 (Figures)** describe the complete cycle of the universe which the universe follows in an energy-neutral way. This cycle of the *universe / Taeticycle* consists of 29 defined and mathematically modelled steps / phases. For energy reasons, this cycle only unwinds forward. Nowhere does it stop and nowhere does it go back in time! It only moves in one forwards direction!

The 29 phases, together, is completed during a cycle-time of approximately 2 - 3 trillion (10^{12}) years. In **phase 29** and 2 - 3 trillion (10^{12}) years later, accurate to the second, the universe is back in the exact same position at center **C** and with exactly the same Little Bang black hole with a radius of 50 – 100 million km. Then, finally it reaches a point below *Cribhgra*. With this, the next energy neutral cycle of the universe starts again. Basically, this cycle is settled in exactly the same way as all infinite cycles before, and all cycles to come in future.

-) The super cold Little Bang; all the atoms and, therefore gravity, disappear:

The cycle of the universe started with a *super cold Little Bang black hole* in which all matter and energy of the universe was gathered through gravity. By falling below the *Critical black hole gravity (Cribhgra)*, all black hole atoms fall apart into an equal number of ordinary protons and electrons. See **Document G6 + Figures**.

During the first period of approximately 5 - 10 billion years after the Little Bang, the universe expands at a constant speed of approximately $\frac{1}{3}^{rd}$ - $\frac{1}{2}^{th}$ of the speed of light c and as *mono-layers of alternating loose protons and loose electrons*. Atoms are absent!

The single protons and electrons possess, as elementary characteristics, only a fixed quantity of:

- 1) mass / matter,
- 2) charge,
- 3) magnetic spin,
- 4) volume and
- 5) internal and external kinetic energy.

Similar to the Higgs particles neutrinos and photons, the loose protons and electrons do not generate *gravity*. In this first and long period of 5 - 10 billion (10^9) years, the atom is completely absent. Without atoms, there is no gravity in the universe and thus no gravitational energy! See **Documents E3 and E3-1**.

Due to the absence of gravity in the first 5 – 10 billion years, the universe-spherical-shell expands fully unhindered and relative to the center **C**, at a constant and equal velocity of $\frac{1}{3}^{rd}$ - $\frac{1}{2}^{th}$ of the speed of light c . Center **C** is the only center of the universe where the last Little Bang, and all Little Bangs before that, happened.

As long as the atom and gravity is absent, this expansion could continue forever. However, this does not happen because hydrogen is formed..

-) The formation of hydrogen; gravity / gravitational energy (= 'dark energy') returns to the universe:

About 5 - 10 billion (10^9) years after the Little Bang and at an expansion of about 3 billion light-years relative to center **C**, all protons catch their own 'shell' electron to form one hydrogen atom / hydrogen molecule. At that time, the expansion velocity is still about $\frac{1}{3}^{rd}$ - $\frac{1}{2}^{th}$ of the speed of light c .

With the formation of the hydrogen atom, together with the enormous velocity, it results in huge deviations in the orbit of all 'shell' electrons of hydrogen. In response, the deviation of these 'shell' electrons of hydrogen generate one physical force, one chemical force and gravity. Due to the enormous speed relative to center **C**, the generated *gravitational force* is also great.

With the gravity a very large amount of gravitational energy relative to center C automatically creates both:

- a) a huge amount of *radial gravitational energy*, relative to center C of the universe, and
- b) a huge amount of *transverse gravitational energy* within the universe-spherical-shell.

Both forms of gravitational energy are added to each cycle of the universe free of charge! This may seem idiotic to current scientists. **The, 'freely added', gravitational energy is none other than the unexplained 'dark energy'!**

(The primary goal of gravity is to slow down the velocity of the atom in the universe and to slow down the expansion of the universe relative to center C. From that moment, gravity guides all (black hole) matter back to center C again.

Met opmerkingen [BUW1]:

The secondary goal of gravity is to create gravitational energy. This gravitational energy is required and used to complete the cycle of the universe. At the end of each cycle, this freely added gravitational energy is completely utilized! Every cycle creates its own free gravitational energy.

-) Slowing down the expansion causes the connected expansion energy to be transformed into rotational energy:

With the hydrogen atom, gravity and gravitational energy is introduced. Gravity immediately starts to slow down the expansion rate of the universe-spherical-shell. This deceleration started about 35 - 40 billion years ago and is still continuing. In about 350 - 450 billion year from now, gravity will have reduced the expansion speed of the universe-sphere-shell to absolute zero. After this occurs, and with the maximum expansion of about 3.0 - 3.5 billion light-years. Then the universe-spherical-shell will start shrinking again in the direction of the fixed center C.

With the decreasing of the expansion speed, kinetic energy is released. This energy can be partly converted into gravitational energy relative to center C, but the rest of this energy cannot be converted into heat. So, the remaining kinetic energy has to be fully transformed into rotational energy within the universe-spherical-shell and the pure hydrogen gas present.

The inhibition of the expansion speed and the conversion into rotational speed is evident in the rotational speed of all galaxies. The first phase of the rotation of these galaxies already started about 35 - 40 billion years ago and not 13.8 billion years ago as believed according to the Big Bang theory! Therefore, all current visible galaxies actually rotate much faster than the information based on the Big Bang theory!

The current rotational speed is the natural angular velocity of galaxies. Thus, the fast rotation, as is believed, is actually the normal angular speed and has nothing to do with 'dark energy' (= gravitational energy).

These rotations form the direct and visible evidence that the expansion of the universe and the deceleration of the universe has been going on for more than 13.8 billion years! This deceleration of the expansion speed is still continuing. In the next 350 - 450 billion years, this expansion speed will be reduced to zero while the angular speed of the central black holes will increase to $\frac{1}{5}^{rd} - \frac{1}{2}^{th}$ of the speed of light c . Then all expansion energy will be transformed into rotational energy of the remaining central black holes.

-) All the galaxies and radiation disappear into their central black holes:

Approximately 350-450 billion years from now, the expansion of the universe-spherical-shell will come to a complete stop. In the meantime, however, all hydrogen, helium and lithium in stars will have merged into the element beryllium or higher. All matter and energy of the galaxies will be fully incorporated into the remaining central black hole or in one of the other billions of central black holes. Separate from the expansion speed, all current galaxies undergo somewhere between 4 - 8 different kinds of rotational /angular speeds. (A more exact number can be obtained when the universe is mathematically modelled).

In the future, all galaxies will merge. Through the collision of the galaxies, the number of different rotational speeds will decrease. Finally, only one rotational / angular speed will remain - that of the super black hole consisting of about $2^5 - 2^7$ currently present galaxies. Each collision removes one speed. At the end of the expansion, all the rotational axes of the final super black holes point exactly to center C of the universe!

At the end of the expansion of the universe-spherical-shell, only about 4 billion fast rotating big central black holes remain as the only remnant of the current 4 - 20 billion or more galaxies. (This requires a model of the cycle of the universe!)

-) At the end of the expansion, all the expansion energy is converted into rotational energy:

The kinetic energy of the expansion of the universe will, in the next 350 – 450 billion years, be fully converted into the rotational velocity / energy of the central black hole which is present in the center of each galaxy. Then all the gravitational energy and kinetic energy will be concentrated in the giant central black holes. They all rotate at the same velocity of about $\frac{1}{3}c$ - $\frac{1}{2}c$ of the speed of light c and in the same direction either clockwise or anti-clockwise.

Due to the fact that the central black holes all have the same direction of rotational-/ angular velocity, they all emit the same kind of gravitational force. They are all present in the balloon-shape of the universe-spherical-shell and attract each other mutually. As a result, the universe starts all over again at the same moment and with the simultaneous contraction in the direction of the fixed center **C** of the universe.

-) The gravitational contraction of the universe is totally opposite to that of the expansion:

The contraction generates a contraction speed / kinetic energy and results in an own form of contraction gravitation. The kinetic energy, contraction speed and gravity of all central black holes are, however, completely opposite to the rotational speed and amount of gravity emitted of the giant super central black holes. In fact, this rotational / angular speed is the result of the expansion speed and related kinetic energy! With the increase of the *contraction speed* relative to center **C**, the resistance continues to increase.

-) Constant contraction speed of the universe-spherical-shell:

For the central black holes, this results in an equilibrium and a more or less constant shrinking speed of about 100 - 150 Mm/s. The shrinking speed of the super central black holes is exactly the same everywhere. Overall, this results in a constant contraction of the universe-spherical-shell to retreat towards the center **C** of the universe. During this contraction, the rotational speed of the central black holes decrease extremely slowly. Through gravity, all central black holes are simultaneously directed back to exactly the same Little Bang point and the same center **C** of the universe.

Coordinated by gravity, all central black holes arrive close to the center **C** of the universe at exactly the same moment; see **Figures 1 – 12 and Documents G7 or G8**.

Just before the giant central black holes touch each other, their rotational speed fall to zero. The central black holes, which no longer rotate, flow quietly together and form a universe-spherical-shell consisting of pure black hole matter with an empty and hollow inner sphere. The contraction continues and eventually results in the Little Bang black hole. The contraction speed is just enough to keep all black holes above the *Critical black hole gravity (Cribhgra)*.

Overall, the contraction of the universe is a very quiet process! By modelling this contracting it can be described precisely. Each cycle of the universe ends with a super 'Soft Crunch'. There is no 'Big Crunch'.

-) Modelling the cycle of the universe:

In 2016 the author plans to model all 29 phases/steps of the cycle of the universe mathematically. This model will be based on the basic visions on space and time (**G2**), the 12 parameters of the universe (**G3**), the nine laws of the universe (**G4**) and a completely closed universe regarding mass, matter, electric charge, magnetic spin and kinetic energy (**G9**).

The parameters include: universe clock time, length, size of the universe, space, the speeds / rotational speeds, distribution of kinetic and gravitational energy on mass and matter, physical and chemical forces and their bonds, temperature etc.

With the necessary preparative work and the help of 10-15 specialists, the model of all 29 phases should be available within a few months. The 29 models will then be combined into one complete model of the universe and its energy-neutral cycle!

With a mathematical model, the 12 parameters of each of the 29 phases/steps can be quantitatively and similarly aligned. For every step in the cycle of the universe as well for the cycle as a whole, all relevant parameters and variables will be *quantitatively* filled in.

-) A fully and quantitatively filled universe:

From this model follows, among others:

- a) the minimum and perhaps maximum number of protons and electrons, and the total amount of mass / matter,
- ..b) the amount of fixed kinetic energy on the elementary Higgs level and more free energy above,
- c) the distribution of radial and transversal energy and momentum,
- d) the total cycle time of the universe,
- e) the maximum possible expansion of the universe,
- f) the current universe clock time and the maximum universe clock time of the universe,

- g) the extent of the already completed expansion of the universe
 - h) the amount of gravitational energy ('so called dark energy') and its distribution,
 - i) the distribution of kinetic and gravitational energy during the cycle of the universe.
- (See **Figure 79** and **Documents G7** or **G8**)

The clock time of the universe is already at about 40 - 45 billion (10^9) years of the approximately 2 - 3 trillion (10^{12}) years of the whole cycle. The universe clock time of Science and literature is only 13.8 billion years old. Science is still debating whether the universe expands infinitely or will come to an end and / or will shrink again. The question still remains as to what preceded the *Big Bang*? That discussion has been elaborated on in **Documents G6, G7** and **G8** www.uitewijkwinkel.eu

-) Why this universe did not start with a hot and explosive Big Bang:

According to the fully accepted Big Bang theory in Science, the universe started with a superhot and super explosive blast. In accordance with **Einstein's** $E = mc^2$ all matter of a *singularity* or a *Big Bang black hole* was completely converted into *pure energy*.

(It is ridiculous to suppose that gravity can cram together all the mass and all the kinetic energy of the *whole universe* into one **singularity** with the size of, let's say, a football! More plausible is that the start of the universe occurred from a gigantic black hole with a radius of 50 – 100 million km containing all mass, matter and kinetic energy of the universe).

According to this Big Bang theory, after the Big Bang that singularity, the universe expanded *inflationary* at a speed (much) greater than the speed of light c . This inflationary expansion of the universe is however fundamentally inconsistent with the Theory of Relativity!

This supposedly pure energy is unknown in physics. Energy is practically always in the form of neutrinos and photons. Neutrinos and photons are majorana particles and they possess: a) mass, b) charge, c) spin d) kinetic energy and e) a spatial structure which is not measurable. See **Figure 12 Document F1b**.

In the current *Big Bang model*, this released pure energy is, for completely unknown reasons, entirely transformed back into mass and matter after only 10^{-34} seconds, beginning with elementary particles of matter which then grow further into quarks and finally into *neutrons*. It is completely unclear how this process of transforming energy \leftrightarrow mass exactly occurs *and especially* how this process unwound in a clear *step-by-step* succession.

The incredibly fast conversion of the liberated *pure energy* into elementary particles of matter causes the *Big Bang theory* to lack all credibility. The step-by-step transformation process of pure energy to unstable *neutrons* is completely missing. This fact makes the *Big Bang theory untenable!* The processes in the first 380,000 years after the Big Bang are, and remain, totally obscure as well. The question how the hydrogen atom and, finally, the elements of the periodic table were build up from pure energy, is still unsolved. Since the Big Bang Theory has been presented, these problems/questions have not been solved or answered.

-) Big Bang without loose neutrons:

How the Big Bang theory created neutrons (1 proton + 1 electron) is nothing less than a ruse. Neutrons are unstable. Free neutrons are all unstable and fall apart in one proton and one electron within fifteen minutes. These protons and electrons, derived from the neutron, move more or less parallel to each other at the speed of light c and in the same direction from the center C of the universe.

From these, basically *parallel moving protons and electrons*, it is impossible to get the electron in an orbit around the proton and then to, together, form a hydrogen *atom*. No hydrogen atom / molecule can be reconstructed from neutrons.

Conclusion 1: The universe could not have started from a *singularity* but started with a *super large black hole* in which gravity brought together all mass, all matter, all kinetic energy and gravitational energy of the universe. Black holes and compact celestial bodies all exist as a result of black hole atoms that repel each other and they are only held together by gravity.

Conclusion 2: Black holes are extremely unstable! Once the gravity becomes less than the Critical black hole gravity (*Cribhgra*), the black holes fall apart explosively into loose unstable black hole atoms which then further disintegrate into an equal amount of protons and electrons.

Conclusion 3: The current universe could not have started with a Big Bang and from the *formation of neutrons*. The Theory of Relativity and the connected formula $E = mc^2$ have wrongly led to a Big Bang theory which states that the universe started from a singularity.

Conclusion 4: At the beginning of this universe, the (black hole) matter was not converted into pure energy but directly into an equal amount of protons and electrons.

-) *How this universe started?*

-) **The universe started with the creation of the Little Bang black hole:**

The author proposes that the gravitational force collected all mass, all matter and all kinetic energy in one king size Little Bang black hole with a radius of about 50 - 100 million km! This single Little Bang black hole is made up of 4 - 20 billion non-rotating central black holes each with a radius of approximately 50 - 100 km. At the end of the contraction the giant black holes did not rotate anymore and had a perfectly round spherical shape. Each *central black hole* contains at least *all* matter, kinetic energy and gravitational energy of about $2^5 \cdot 2^7$ former galaxies from the previous universe. (At the end of the expansion of the universe-spherical-shell all these black holes are built up of about $2^5 - 2^7$ current visible galaxies. Every collision is visible with **LIGO**)

-) **What is black hole matter?**

Black hole matter / atoms are based on ordinary atoms whose electron shells have collapsed towards the atomic nucleus (**F1e + figures**). These 'shell' electrons have an angular speed of about the speed of light c . With the collapse of the electron shells the nucleus gets completely enclosed by the electron shells. The nucleus of the black hole atoms cannot vibrate anymore. This is why the temperature of all black hole atoms is near absolute zero Kelvin and most probably at approximately 2.7 Kelvin. This would be equal to the background temperature of the universe!

During the collapsing of the electron shells of the atoms all vibrational energy of the nucleus is added to the 'shell' electrons as well. These 'shell' electrons of the black hole atoms accelerate towards the speed of light c . Due to this acceleration, all electron pairs fall apart into loose 'shell' electrons again. During the collapsing, all electron shells and sub-shells of the black hole atoms stay intact. They have the same structure as the original common atoms. See **Figures 18a - 18n and Document F1e**.

-) **A normal atom should have minimally two electron pairs to be transformed into a black hole atom:**

The electron shells can only collapse if the atoms have at *least two electron pairs*. Within the electron shells of one atom the van der Waals / London bonds can only be formed when at least two electron pairs are present. Only ordinary atoms with at least two electron pairs can collapse, from the *inside*, to form atoms in a black hole state. This process of collapsing of atoms starts with Beryllium (Be)!

The elements H, He and Li, and the H_2 molecule possess no or only one electron pair. These three elements can, therefore, not *transform into black hole atoms!* See **Document F1e** and the **Figures 18a - 18n**.

Hydrogen, helium and lithium are not absorbed by black holes! This is visible in the centers of the central black holes of galaxies.

-) **Formation of the Little Bang black hole:**

Under the influence and control of gravity, the 4 -20 billion, non-rotating super central black holes, gather at exactly the same place and the same moment around the center **C** of the universe. On the way back to **C**, the central black holes are stripped of their rotation and their rotational gravitation.

To keep the required gravitation in the black hole stable, it is generated by the final shrinking speed which continues to decrease.

Each cycle of the universe ends with a 'Super soft' Crunch. This ending of the universe is a very calm process and is fully predictable. The retreat from the largest expansion of the universe-spherical-shell towards **C** takes approximately 2 - 3 trillion (10^{12}) years or even more. The cycle of the universe repeats itself infinitely with exactly the same amount of mass, matter and kinetic energy. Each cycle lasts for exactly the same time.

-) **During the shrinking of the universe-spherical-shell, the central black holes are completely stripped of their rotational speed/gravity and gravitational energy:**

The shrinking of the universe is at the expense of the rotational speed of the central black holes which are finally formed. When they arrive at the center **C** of the universe, the central black holes are completely stripped of their angular speed and rotational gravity and, of course, the related rotational gravitational energy!

The non-rotating black holes can quietly 'merge' into a 'shell' of black hole matter with a thickness of about 20 - 30 thousand km and with a radius of a few billion km. The universe-spherical-shell is completely empty on the inside and the outside. Gravity continues to cause the shrinking of the universe-spherical-shell of black hole matter. The interior space of the universe-spherical-shell gets smaller and the thickness of the shell of black hole matter continues to increase. The shrinking speed continues to decrease slowly and thus gravity and the remaining gravitational energy of the pending Little Bang black hole!

The stability of the Little Bang black hole, which is under construction, becomes increasingly critical and, in time, approaches the *Critical black hole gravity Cribhgra!* The hollow space around the fixed center **C** of the universe gets smaller. Center **C** is always and exactly in the center of the *Little Bang black hole* being formed. At the end of the contraction, all black hole matter of the universe comes to an absolute standstill around **C**. This results in the formation of only one *Little Bang black hole* with **C** exactly in the center!
For gravity and *Cribhgra* see **Document E3** and **Document E3-1** www.uitewijkwinkel.eu

-) The electric spring tension in black holes:

The electron shells of black hole atoms mutually repel each other. Inside the black holes, a huge electric spring tension exists between all black hole atoms. This electric spring tension makes all compact celestial bodies and black holes extremely unstable! The black hole atoms, which repel each other, only remain captured in a black hole if the black hole generates more gravity than the existing electric spring tension between the black hole atoms!

-) Gravity in the Little Bang black hole continues to fall towards zero:

Finally, the size of the *Little Bang black hole* is about 50 – 100 million (10^6) km. At the end of each cycle the same *Little Bang black hole* is formed. There are *exactly the same amount of matter/mass and kinetic energy* as in all previous Little Bang black holes and in all future Little Bang black holes.

At the end of the contraction, the Little Bang black hole and the universe threatens to come to an end as one, completely filled, black hole with *no speed and practically no gravity*. Thus, the cycle of the universe ends in one giant black hole with a radius of 50 – 100 million km and comes to a complete standstill in the universe relative to center **C**. Each cycle of the universe bring it closer to this point.

This Little Bang black hole, which is under construction, only remains stable as long as the black hole generates more gravity than the minimum required *Critical black hole gravity (Cribhgra)*. As long as the gravity is higher than the mutual electrical repelling / spring tension, the black hole stays stable and keeps the black hole atoms trapped inside it.

At a speed of about zero compared to **C**, the gravity and gravitational energy of the *Little Bang black hole* is reduced to *practically zero!* Only in the final moment of construction, the contraction speed of the Little Bang black hole reaches zero and its gravity drops under *Cribhgra*. At this point, the mutual repelling / spring tension between the electron shells of the black hole atoms take over the direction from gravity. The Little Bang black hole now becomes completely unstable everywhere and at exactly the same moment.

The *Cribhgra point* is equal to the gravity and the rotational energy / speed of the smallest, yet possible, stable black holes in the universe. They are compact celestial bodies and the black holes have a diameter of about 10 - 20 km and a rotational speed of approximately $\frac{1}{3}$ rd- $\frac{1}{2}$ th of the speed of light *c*. *Cribhgra* can be calculated theoretically.

-) Critical black hole gravity (Cribhgra) and the Little Bang:

When gravity drops below the minimum required *Cribhgra* for stability, the existing *electrical spring tension* becomes too large to keep the black hole atoms locked up inside it. At that time, the *Little Bang black hole* falls apart into loose black hole atoms. Without the protection of gravity the loose black hole atoms fall apart into an equal number of protons and electrons. See **G6**. If small black holes pass this critical point of gravity / kinetic energy, it normally results in a gigantic explosion which ends in protons and electrons. However, with the Little Bang this explosion is extremely cold (0 Kelvin) and happens calmly.

-) The Little Bang:

At the very last moment, in a split second just before the Little Bang black hole has been completed, the gravity of the Little Bang black hole drops below *Cribhgra* (*Critical black hole gravity*). The hollow space is reduced to only a few centimeters or perhaps meters. The Little Bang happens everywhere at exactly the same time, because gravity moves with infinite speed.

At the very same moment all the 'shell' electrons, which are moving at the speed of light c , leave their nuclei. These fast electrons then split their neighboring atom cores into individual protons and 'core' electrons. See **Document G6 + figures 13 - 30**.

At the super cold Little Bang, all black hole atoms fall apart in an equal number of loose protons and loose electrons. The Little Bang takes place at 0 Kelvin and without any visible form of 'explosion'. During the *Little Bang* a form of electromagnetic radiation is emitted. At the moment of the Little Bang, all atoms disappear and then suddenly the gravity of the universe drops from *Cribhgra* level to absolute zero! All gravitational energy disappears as well. (**LIGO** could not have detected the shock of gravity but only the shock of the fall of the gravitational energy to zero).

The *black hole atoms* in this Little Bang black hole has a ratio of approximately:

-) 'core' protons : 'core' electrons : 'shell' electrons = 2.1 : 1.1 : 1 associated with the connecting speed ratios:
-) 'v core' protons : 'v core' electrons : 'v shell' electrons = 0 : 0 : c (= speed of light).

After the Little Bang the 'shell' electrons, moving at the speed of light c , accelerate the freed 'core' electrons to the same speed of approximately 207,000 km/s or $\frac{2}{3}c$. See **Figure 22**. The free electrons do not transmit energy to the protons! Just after this super cold *Little Bang* all protons stop moving relative to C.

-) Formation of mono-layers of protons and electrons:

Under the influence of the opposite charge, and their equal magnetic spin, the protons and electrons which have been freed, arrange themselves into absolute frictionless layers of alternatively 1 proton / 1 electron / 1 proton / 1 electron thick. See **Figures 24 – 28 of Document G8**.

These mono-layers of stationary protons and layers of electrons moving at $\frac{2}{3}c$, attract each other mutually through their charge but are also repelling each other at the same time through their equal magnetic spin. Therefore, there is no real physical touch between the mono-layers of protons and of electrons which means that no kinetic energy can be exchanged.

After the Little Bang, these protons and electrons move under perfect conditions and without any friction. See **Figures 27 and 28**. The cycle of the universe, according to the author, therefore, starts with a super cold (0 Kelvin) Little Bang without any form of explosion; See **Document G6**. In all aspects this Little Bang is very simple when compared to the current 'dark' Big Bang theory.

-) Expansion of the universe starts with $\frac{1}{3}c$ - $\frac{1}{2}c$ of the speed of light c :

A large electric spring tension as well as a repelling spin between all the mono-layers, are present inside the mono-layers of protons and electrons. This results in huge spring tension and huge expansion velocity of the mono-spherical-layers of protons / electrons at about $\frac{1}{3}c$ - $\frac{1}{2}c$ of the speed of light c . This spring tension starts peeling the mono spherical layers of protons and electrons from the former Little Bang black hole from the outside by removing it radially with $\frac{1}{3}c$ - $\frac{1}{2}c$ of the speed of light c . These mono-spherical-layers always keep the center C exactly in the center. See **Figures 28 and 30**. Apart from moving transversally at approximately $\frac{2}{3}c$ speed of light c , the electron also move in orbits around C. See **Figures 23 and 24**.

-) The 'Little Bang black hole' swells without any inflation:

The peeling of the former 'Little Bang black hole' in mono-layers of protons and electrons takes approximately 1,300 - 1,500 years! This peeling only ends when a hollow and empty interior is created around the center C. The Little Bang is only completed after some 1,300 – 1,500 years!

The '*Little Bang black hole*' then swells to a uniform sphere with mono-layers of protons / electrons and with a radius of at least 500 - 700 light-years. According to **Uiterwijk Winkel** the universe swells without any kind of inflation after the Little Bang has occurred!

-) Very slow transfer of energy by the electrons on protons:

As a result of the almost frictionless movement between the 1 : 1 spherical layers of protons and electrons, it takes about 5 – 10 billion years before the transverse velocity and kinetic energy of the electrons are fully transferred to the mono-layers of protons. The expansion velocity of the universe-spherical-shell increases marginally.

During the first period of expansion there is no *atom present*, and thus gravity and gravitational energy are also absent! The universe / universe-spherical-shell expands uniformly for about 5 – 10 billion years at a constant rate of $\frac{1}{3}^{\text{rd}}$ - $\frac{1}{2}^{\text{th}}$ of the speed of light c relative to the center C of the universe.

-) In the universe-spherical-shell there is an enormous secondary swelling during the first 5 – 10 billion years:

Due to the expansion and stretching of the universe-spherical-shell, the mono-layers of protons and of electrons get more space. During the period of about 5 - 10 billion years, the mutual distance increases, not only between the mono-layers of protons / electrons but also between the protons and electrons themselves inside their own layers. This process happens very slowly. This results in a giant secondary swelling of the volume of the universe-spherical-shell by a factor with a magnitude of $10^6 - 10^{12}$.

In this first period of 5 - 10 billion (10^9) years, the universe-spherical-shell obtains a uniform radius of about 2.5– 3 billion light-years! During this period, the atom and therefore, also *gravity /gravitational energy are absent!* This expansion of the universe occurs completely 'free of charge' and does not cost any energy! This fact has far-reaching consequences.

-) Formation of the hydrogen atom:

About 5 - 10 billion years after the *Little Bang* the *transverse velocity of the electrons* within the universe-spherical-shell decreased from $\frac{2}{3}^{\text{rd}}$ toward approximately two thousand km/s. This velocity is equal to the velocity of the 'shell' electron in the hydrogen atom.

In the meantime, because of the expansion of the universe, the mutual distances between protons and electrons have increased to the distances present in the *hydrogen atom*. See **Figure 32**. Throughout the universe at exactly the same moment, all protons capture their own 'shell' electron to form a hydrogen atom. In this step no neutrons are formed!

-) With the formation of the H atom, gravity and gravitational energy relative to the center C are also formed:

The formation of the hydrogen atom / radical, occurs in conjunction with the expansion velocity of a $\frac{1}{3}^{\text{rd}}$ - $\frac{1}{2}^{\text{th}}$ of the speed of light c . This hydrogen atom simultaneously generates gravity and gravitational energy relative to the center C !

Due to the enormous speed of the hydrogen atoms, the amount of gravity generated is very high. As a result, gravity and huge amount of gravitational energy relative to the center C is automatically added to the universe and the cycle of the universe! This gravitational energy relative to C is *completely free* of charge! (This gravitational energy is what science considers 'dark energy' and has been trying to find an explanation for it for a long time). See **Documents E3 and E3-1**.

-) Gravity inhibits the further expansion of the universe until this expansion comes to a complete halt:

The gravity immediately starts to inhibit the expansion speed of the universe-spherical-shell. This deceleration as a result of gravity started approximately 35 billion (10^9) years ago and is still going on. In the next approximately 350-450 billion years, the expansion speed of the universe will be reduced to zero. Then the universe-spherical-shell will start a uniform contraction in the direction of center C again.

-) The slowing down of the expansion results in the conversion of expansion energy into rotational energy:

The energy released by the deceleration of the expansion of the universe cannot be converted into heat. This energy is almost entirely converted into the rotation of the hydrogen gas in the universe-spherical-shell. This slowing down process is visible in the actual (and normal) rotation / angular speeds of the current galaxies. The excessive rotational speed of galaxies arose *completely natural* in the period preceding the 4 - 20 billion Big Bangs and the start of the galaxies. The high rotational speed of the galaxies are the visible evidence that the slowing down of the expansion of the universe is still going on. The expansion of the universe-spherical-shell eventually comes to a complete stop. Then, due to gravity, the universe will start shrinking again.

Due to the speed of the hydrogen atoms / molecules which was formed in the universe, the 'shell' electrons generate the chemical covalent radical force and the van der Waals / London force causing the *physical phases* of gas, liquid and solid. See **Document F1d**.

During the formation of the hydrogen molecule much binding energy is released. This results in a high temperature and an explosion. With the formation of the hydrogen atom/molecule, 5 - 10 billion years after the Little Bang, the physical and chemical phenomena such as gravity, gravitational energy, the covalent radical force, light, infra-red and temperature are back in the universe.

-) Cooling, gas pressure loss and the formation of hydrogen super large bulbs all end in hydrogen supernovas / Big Bangs:

Due to the extreme temperature and pressure, the hot and newly formed pure hydrogen gas in the spherical shell expands explosively both inwards and outwards. The universe-spherical-shell of hydrogen gas swells with a few tens of km/s on both sides. The slowing down of the expansion velocity through gravity, results in 4 - 20 billion *rotating areas* **R1** of pure hydrogen with a radius of 1 - 2 million light-years and finally with 5 – 10 different types of angular speeds. Each **R1**, rotation area, later results in one galaxy.

The hot universe-spherical-shell of hydrogen gas cools down again by emitting light and infra-red photons. Eventually this, increasingly rotating hydrogen cools down so that the hydrogen condenses and is transformed into pure liquid hydrogen starting in the rotation centers **R1**. This condensation results in pressure differences within the universe spherical-shell of pure hydrogen gas. Through gravity the liquid hydrogen mainly accumulates in the billions of rotation centers **R1s** and, within them, 5 – 10 different types of angular speed. Because of gravity in the **R1s** the matter, gravity, kinetic energy and the transverse gravitational energy accumulate more and more.

Due to the releasing of the transversal gravitational energy, both the temperature and the rotational / angular speed start slowly and the rotational speed increases in time.

As a result of the pressure differences and the accumulation of gravity, approximately 4 - 20 billion or more supersize spheres of rotating hydrogen **R1s** are formed which, in time, will rotate faster. The temperature in the hydrogen bulbs rises to many millions of degrees. In the end, about 95% – 98 % of all available hydrogen around every **R1** is trapped in one of these many billions of hot rotating hydrogen spheres **R1**.

-) Billions of hydrogen supernovae / Big Bangs:

At a particular moment, some 10 - 15 billion years after the forming of hydrogen and about 20 - 25 billion years after the Little Bang and about 20 - 25 billion years ago, both the pressure and the temperature in the pure hydrogen spheres reach the point where the fusion of hydrogen starts within the centers of the hydrogen spheres.

Each giant hydrogen sphere **R1** results in one *gigantic hot and explosive Big Bang*. See **Figures 42 - 52 and Documents G7 and G8**. The billions of supernovae / Big Bangs occur simultaneously and within one hour! The universe-spherical-shell and its gravitational energy have already expanded uniformly over a distance of approximately 2.5 - 3 billion light-years around the center **C** of the universe.

By this time, the temperature and pressure of the billions of hydrogen gas spheres are completely 'oversized' which results in the nuclear fusion process getting out of control immediately. This fusion process starts at the same time as an overwhelming *hydrogen supernova explosion or Big Bang*.

-) Only a limited part of the hydrogen merges at the direct formation of the central black hole:

In the hydrogen supernovae explosions approximately 15% of the hydrogen present merge and approximately 85% is blown away as hydrogen gas together with the outside of the shell where fusion took place with higher elements than hydrogen. This area contains approximately 2 % of the hydrogen that was present originally See **Figures 49 - 51 and Document G8**.

-) The formation of the central black hole of the galaxy:

During the fusion about 13% of the hydrogen in the center of the supernova is transferred into elements higher than Fe. Through the increase of the angular speed the van der Waals / London bonds are formed between the electron pairs of the newly formed atoms. Because of the bonds, the electron shells of the newly formed higher elements \geq Be collapse into black hole atoms. This directly results in the formation of the central black hole of the future galaxy. The central black holes **R1** are currently present in the center of all galaxies.

-) The formation of stars and galaxies:

The majority of the hydrogen is expelled from the outer edge by the *Roemers*. See **Figures 44 - 52 of Document G7 and G8**. In all galaxies the usual 2 – 4 stripped *Roemers* develop into the spiral arms of the galaxy. This hot hydrogen gas which was emitted by the supernova, expands and then cools down again from plasma to hydrogen gas. At the end, it cools down in such a way that the hydrogen condenses for the second time.

The condensation process occurs in the 4 - 20 billion proto-galaxies. In all proto-galaxies and under the influence of gravity, 100 - 200 billion large lumps consisting of radioactive supernova grit arises, and moves in fairly flat orbits around the system of 1-10 smaller spheres. The big spheres form the core of future stars. The smaller nuclei results in gas planets and ordinary small planets with their own satellites / moons.

By cooling down, it causes the formation of 100 - 200 billion relatively small liquid hydrogen spheres each surrounded by a number of 1 – 10 (gas) planets including *Oort clouds* and *Kuiper belts*. When the fusion starts the process results in billions of stars or binary stars.

-) All stars develop around nuclear radioactive material:

The formation of the proto-stars occur around the big celestial bodies. In the center of all the proto-stars is a large amount of highly radioactive atoms emitted from the earlier supernova / Big Bang. A high amount of radioactive material can still be present billions of years after the Big Bangs.

Due to the radioactive material, the *fusion process* in the proto-stars starts much earlier than in the former pure gigantic hydrogen spheres. Once started the fusion process develops in a much calmer manner and unwinds completely controlled when compared to the earlier Big Bangs. In all galaxies, this results in approximately 100 - 200 billion smaller and bigger relatively 'quiet' merging stars with 1 – 10 accompanying (gas) planets which again are accompanied by 1 - 10 or more satellites / moons. Most stars are surrounded by an *Oort cloud* and *Kuiper belt*.

-) The purpose of phase 23 is so that all hydrogen, helium and lithium can merge to elements \geq Be through nuclear fusion:

The cycle of the universe is currently in **phase 23**. During the next 350 - 450 billion years of **phase 23**, all existing stars and any newly formed stars will 'burn' their hydrogen, helium and lithium through nuclear fusion to beryllium (Be) and higher. Black hole atoms can only be formed from the common atoms of beryllium. Only these collapsed atoms can be incorporated into a black hole. (H, He and Li are not accepted by black holes!)

This process of star formation - old and new – will continue for the next hundreds of billions of years until finally:

- a) all electromagnetic radiation is transformed into protons, electrons and hydrogen,
- b) all hydrogen in the galaxy and all surrounding celestial bodies are fully captured in stars and converted, through nuclear fusion, into beryllium or higher,
- c) all matter of the galaxy is captured in the central black holes.
- d) through future collisions of galaxies, the current 5 – 9 speeds within each galaxy and between the galaxies are transformed into only one angular speed of the supersize central black holes finally formed.

-) All electromagnetic radiation is transformed into protons, electrons and hydrogen:

During this period all forms of light, infra-red and particle radiation are fully transformed back to protons, electrons, and eventually to hydrogen. Through star formation and fusion the hydrogen is converted into beryllium and higher again. Finally, this matter is all absorbed by the central black hole of one of the galaxies. The collision of galaxies is necessary in order to reduce the current angular speeds, outside and inside galaxies, to only one.

-) The universe is not expanding faster but actually expanding slower and slower:

Due to deflection, we observe the universe exclusively via the relatively thin, and slightly bent, universe-spherical-shell containing extremely low concentrations of hydrogen (between galaxies) and hydrogen and helium (inside galaxies). All galaxies have the same expansion velocity now. Because of the distance and the restriction caused by the speed of light, the real expansion speed of galaxies cannot be observed.

Earlier, the universe / the universe-spherical-shell expanded at a rate of $\frac{1}{3}^{\text{rd}}$ - $\frac{1}{2}^{\text{th}}$ of the speed of light *c*. However, since the formation of hydrogen, about 35 billion (10^9) years ago, gravity has inhibited the expansion of the universe-spherical-shell. We observe galaxies only through the rather thin universe-spherical-shell (**G9**). As objects / galaxies on the universe-spherical-shell are further away from the earth, we observe, in time, an increasing redshift which matches the former increasing expansion speed of the universe-sphere-shell. The observation is correct but not the interpretation! In reality, all observed galaxies in the universe-spherical-shell have exactly the same expansion speed as our galaxy. Due to the delay, this cannot be observed!

As a result of the deflection of all forms of radiation, we observe the universe / the universe-spherical-shell through this very thin spherical shell (a light-year or less) with extremely low concentrations of hydrogen and helium gas. All the images from the deep universe are completely virtual! Because of this deflection we cannot observe the universe-spherical-shell itself. The deflection results in a universe with a seemingly universal

increasing expanding speed while in reality, due to gravitation, this universe-spherical-shell is expanding slower and slower.

The perception that the expanding of the universe is accelerating, is therefore completely wrong. This very slight deflection and the spherical-shell of the universe have put scientists on the wrong track for many years!

Inhibiting the expansion of the universe through gravity in the period of 15 – 20 billion years prior to the Big Bangs, manifests itself in the seemingly (too) rapid rotation of galaxies. Indeed, that rotation is too fast if you start from the Big Bang theory, but is fully correct in the assumption of the cycle of the universe! (This 'too fast' rotation of galaxies has nothing to do with black energy!)

-) Only atoms \geq Beryllium can be transformed into black hole atoms and be accepted in black holes:

Only the electron shells of atoms \geq Beryllium (Be) can collapse close to the atomic nucleus. Only atoms \geq Beryllium are able to be transformed into black hole atoms and be absorbed into the central black hole of the galaxy. The elements H, He, Li and the molecule H₂ cannot be transformed into black hole atoms. These lightest elements cannot be included into any kind of compact celestial body or black hole!

The lightest elements need to be transformed into Beryllium or a higher element through nuclear fusion in order to be incorporated into a small black hole or into the central black hole of the galaxy. This full merging of H, He and Li into acceptable 'black hole' atoms is central in the current **step 23** of the cycle of the universe. All radiation needs to be converted back into protons / electrons, hydrogen and, through fusion, into Beryllium and higher.

-) Neutrinos and photons can be transformed into protons, electrons and hydrogen :

Within a period of around 14 – 18 billion years, all the emitted neutrinos and photons of light and infra-red are fully transformed into protons, electrons and finally into hydrogen! Within the framework of the cycle of the universe all neutrinos and photons are converted back into protons, electrons and hydrogen.

Not a single hydrogen molecule, to at least beryllium, escapes this fusion process. No atom can escape the inclusion into the central black hole of the galaxy! Within the next 350 – 450 billion years the galaxies and their radiation will disappear into their central black holes completely for 100%.

-) What happened in the period before:

Currently, we are living about 40 - 45 billion years after the start of this universe with a super cold *Little Bang* (0 Kelvin) and the beginning of the current cycle of the universe. Approximately 20 - 25 billion years ago, billions of Big Bangs occurred creating billions of galaxies. These billions of hydrogen supernovae / Big Bangs occurred much earlier than the current assumption of 13.8 billion years ago. In the meantime, all the radiation from these billions of Big Bangs has been fully transformed into protons, electrons and hydrogen. As a result, almost all the information about these Big Bangs and the period before has completely disappeared and been erased! These billions of Big Bangs are not perceptible anymore. From earth the event-horizon of this universe is approximately 14 – 18 billion years old.

In the universe, during the supernova explosions and the fusion processes in stars, enormous numbers of neutrinos and photons of light and heat were emitted. The universe should therefore, be extremely *hot and brilliant*. That is not the case. The universe is relatively dark and very cold with a temperature of only a few degrees Kelvin and very close to absolute zero. Where is all the energy and the emitted light and infra-red photons? What happened to the neutrinos and photons from the supernovae and stars?

-) Transforming radiation into protons and electrons:

In **Document F1a 2014 Uiterwijk Winkel** presented his 'Standard Higgs / string / snare Model 2014'. This model includes only four Higgs / strings / snares particles with 5 physical characteristics: a) mass, b) electric charge, c) magnetic spin, d) spatially volume and e) a basic and fixed quantity of kinetic energy. This results in three fixed rotational speeds of the most elementary particles along their three axes.

From the Higgs particles only neutrinos and photons can be formed i.e. majorana particles. (**Document F1b**).

Document F1c describes how the neutrinos and photons are transformed back into ordinary protons and electrons. The construction of any particles other than protons and electrons, is not possible. From these two basic building blocks, only hydrogen atoms /molecules can be constructed. Through the nuclear fusion of hydrogen, all the elements and isotopes of the periodic table can be constructed. **Document F1d**.

Document F1e outlines the collapse of ordinary atoms \geq Beryllium into black hole atoms.

-) Where is this universe going?

Over the next approximately 350 – 450 billion (10^9) years, the present universe will expand at a decreasing rate. Finally, the expansion of the universe-spherical-shell will stop completely. (The mathematical model of the universe gives a conclusive and a quantitative interpretation of the possible cycle).

At the end of the expansion all matter and radiation are completely locked in the central black hole:

In about 350 - 450 million years, the current available hydrogen will be fused into Beryllium and higher. All electromagnetic radiation will also be converted, through nuclear fusion, into protons, electrons, and hydrogen in Beryllium and higher. These atoms will also have to be converted into black hole matter. Thus, within 350 – 450 billion years, all matter and all forms of radiation will be locked in the central black holes of one of the billions of galaxies.

All the kinetic energy of the expansion will then be converted into rotational / angular speed and energy of the remaining central black holes of the galaxies. Only when all galaxies and all radiation are completely absorbed by their central black holes, the expansion of the universe / the universe-spherical-shell can end.

-) The universe will become emptier and darker:

For the next several billion years, the universe / the universe-spherical-shell will become emptier and darker. Ultimately, the whole universe-spherical-shell will consist of approximately 4 - 20 billion central black holes with a temperature close to 0 Kelvin and rotating in the same direction at $1/2^{\text{rd}}$ - $1/2^{\text{th}}$ c. They will all generate the same amount and the same kind of rotational gravitation and gravitational energy. The gravity and gravitational energy relative to center C, will be converted into rotational energy, gravity and gravitational energy! See **Documents E3 and E3-1**. All central black holes mutually attract each other.

-) The expansion of the universe-spherical-shell lasts about 500 billion (10^9) years:

The author believes that the expansion of the universe takes about 500 billion (10^9) years. These years are included in the total cycle time of the universe which lasts about 2 - 3 trillion (10^{12}) years and possibly even longer. By modeling the cycle of the universe and by calibrating the model, the data can be filled in accurately.

-) The universe / universe-sphere-shell has a spherical shape and is empty inside as well as outside:

The universe, as we observe it, is completely uniform and has an equal distribution of billions of galaxies. The universe has a universal temperature of about 2.7 Kelvin.

According to the author, the universe has, in reality, the form of a 'supersize', relatively thin balloon with billions of galaxies. This balloon is completely empty, both inside and outside. No neutrinos or photons are found here. The universe is captured within this thin balloon. In between the galaxies the balloon is less than one light-year thick. When we observe the universe, it looks quite different and the virtual images do not portray the universe in reality! How can this difference be explained?

-) Minute deflection of all electromagnetic radiation:

Without exception, all forms of radiation (matter, photons, neutrinos) are characterized by the presence of *mass* (m), *charge* (L), *magnetic spin* (M), *volume* and *kinetic energy* (see **Documents F1a 2014, F1b, F1c and F1d**).

All kinds of radiation in the universe, are therefore subject to deflection through:

- a) the electric and magnetic fields of stars and galaxies and the fields emitted by the central black holes of these galaxies, stars and other celestial bodies.
- b) the presence of an extremely low concentration of hydrogen in the universe-spherical-shell *between* the galaxies and an extremely low concentration of hydrogen as well as helium *within* these galaxies.

The deflection is very small and amounts to an estimated magnitude of only one degree per 10 - 40 thousand years! This slight deflection is most likely not technically measurable. See **Document G9**. The deflection is, however, just large enough to ensure that no form of radiation (and therefore, no mass, charge, magnetic spin and kinetic energy) can finally escape from this universe-spherical-shell which is what this universe is in reality. From earth we do not observe the universe as a 'supersize' flat balloon / universe-spherical-shell, but as a seemingly universal, fast accelerating and expanding universe with the earth at the center of the universe!

The result of this deflection is that:

- 1) the galaxies are in completely different places in the firmament than what we observe them to be, and
- 2) galaxies are observed in several places at the same time in the firmament resulting in double counting.

This extremely low deflection of light and of all other forms of radiation result in a virtual deep universe with seemingly 100 - 150 billion galaxies while there are most probably only 4-20 billion, or even less, present. The total number of galaxies and therefore the volume, mass / matter and kinetic energy connected to it, need to be revised downwards.

-) A completely closed universe regarding mass, charge, spin and kinetic energy:

At the end of this cycle of the universe, one *Little Bang black hole* is formed with exactly the same number of protons, electrons and the same amount of kinetic energy that was present at the start of this universe, and at the start of all preceding Little Bangs and universes. The universe is a completely closed system in terms of both mass / matter and in terms of kinetic energy.

The universe is only fully open for the phenomena gravity and time (the universe clock time). Both phenomena are without mass, charge, spin and kinetic energy!

-) A model of the universe and the cycle of the universe is necessary:

Modelling the cycle of the universe will result in establishing the minimum amount of *mass / matter and kinetic energy that have to be present* to unwind the whole cycle of the universe. This mass / matter of the universe will then reflect the minimum, or possibly, maximum number of protons / electrons and amount of kinetic energy.

All 29 steps / phases of the cycle of the universe can be modeled and mathematically described using the 12 basic parameters of the universe. See **Document G3** and the **Laws of the universe in Document G4**. The author expects that by modeling the universe and its processes, it will change our view of the universe radically.

-) After the maximum expansion, gravity starts the contraction of the universe again:

Due to the rotational gravitation, the 4-20 billion central black holes in the universe-spherical-shell, attract each other mutually through their rotational/ angular gravitation. As a result all central black holes return to the center C of the universe simultaneously. Gravity directs the billions of central black holes, approximately 2.5 - 3 trillion (10^{12}) years later, towards the center C of the universe simultaneously for the formation of the next Little Bang black hole and to prepare for the next Little Bang.

At the *moment of the Little Bang*, the space and time of this universe end and the next cycle of the universe starts with a new universe clock time starting at $t = 0$ and with the formation of a new spherical space. The universe always passes the exact same cycle and always reaches the same maximum expansion. The expansion of the universe is finite relative to C! ***The universe, time and space are not infinite!***

-) The acceleration of the contraction of the universe is slowed down continuously:

The acceleration of the contraction of the universe is continually thwarted by the rotational speed and rotational gravitational of the billions of central black holes. The final rotation will be reduced to one during the expansion. The contraction of the universe-spherical-shell is totally opposite to the expansion and angular speed of the final central black holes. The rotational speed and rotational gravitation of all central black holes slow the acceleration of the shrinking of the universe-spherical-shell down to a continuous and relatively small contraction speed of about 100 - 150 Mm/s. The contraction speed of the universe-spherical-shell is exactly the same, always and everywhere. The rotational/angular speed of each central black hole is the result of the slowing down of the expansion of the universe through gravity. The contraction of the universe is in the opposite direction to the expansion!

The contraction of the universe-spherical-shell starts, at first, with a certain amount of acceleration. This results in an ever increasing contraction speed. The contraction speed generates *contraction gravity and its associated kinetic energy* on all 'shell' electrons of the black hole atoms. Both the gravity and kinetic energy are opposite to the existing rotational gravity and the rotational kinetic energy of the central black holes. Thus, the acceleration of the contraction speed is being slowed down. Finally, it results in a balance between the two and causes a constant deceleration of the acceleration of the contraction.

The net effect is a fully controlled, universal, almost similar and more or less constant contraction speed of the central black holes in the direction of the center C of the universe / universe-spherical-shell.

The contraction of the universe-spherical-shell happens at the expense of its own rotational speed and the rotational gravitation of all the central black holes which are formed. Only at the end of the contraction of the universe-spherical-shell, and just before they merge into one giant Little Bang black hole, they are completely stripped of their rotational speed / -energy / -gravitation / gravitational energy!

The momentum of the black holes and of the universe-spherical-shell as a whole, relative to **center C**, also continue to decrease in time. The contraction of the universe-spherical-shell takes an estimated time of 2.5 – 3.0 trillion (10^{12}) years or more to complete and is at the expense of the speed of the rotation of the central black holes.

Each cycle of the universe ends in a super soft Crunch and not in a Big Crunch. At the end of this 'soft' Crunch the same Little Bang black hole is formed.

-) Central black holes form a Little Bang black hole that falls below *Cribhgra*:

During the contraction of the universe-spherical-shell, the central black holes start rotating slower and slower. This results in the generating of increasingly less rotational gravitation and rotational gravitational energy. At the end of the contraction these non-rotating black holes coalesce into one gigantic Little Bang black hole without any form of rotation and with a radius of about 50 – 100 million km.

A few seconds before the contraction of the universe and the formation of the Little Bang black hole is fully completed, the *Critical black hole gravitation (Cribhgra)* is reached. Then the next Little Bang starts with the collapsing of all black hole atoms into an equal amount of loose protons and electrons. At that exact moment the next universe begins. This energy neutral cycle of the universe repeats itself endlessly and always passes through the same 29 phases/steps and lasts about 2 – 3 trillion (10^{12}) years.

Question 1: Conclusions:

- 1) The universe did not start with a superhot Big Bang 13.8 billion years ago, but started 40 – 45 billion years ago with a super cold (0 Kelvin) and relative calm Little Bang.
- 2) During the Little Bang, the black hole atoms fall apart into an equal number of protons and electrons **directly** and not into neutrons. There is no transformation of mass \leftrightarrow energy! (As explained in the Big Bang theory)
- 3) The Little Bang and the subsequent cycle of the universe consist of 29 steps / phases and takes 2 - 3 trillion (10^{12}) years to complete. At the end of each full cycle of the universe a new cycle starts.
- 4) The driving force behind the cycle of the universe is gravity and its connected gravitational energy. Each cycle is completely energy neutral.
- 5) Before the Little Bang there was a 'super soft' Crunch of the previous universe and no Big Crunch!

The cycle of the universe (Documents G7 + G8) can be mathematically modelled. With this model the whole past as well the whole future of the universe can be quantified in detail! The origin of the equal amount of protons and electrons in the universe, is still unknown.

Question 2: The nature of Dark Matter:

Is it composed of some unknown particle element and if so, what ...?

Answer: At the end of the 17th century, **Newton** quite logically linked gravity to mass. However, this was **Newton's** 'half' error. Gravity is not linked to mass, but to the '*shell*' *electrons of atoms* and the velocity of the atom in the universe relative to center **C** of the universe and / or the centers **R1** of galaxies. Gravity is *only indirectly* linked to the mass of atoms! For gravity, see **Documents E3 and E3-1**.

In the 20th century, scientists amplified this error by linking the *phenomenon of gravity* to mass completely and specifically to the mass of the atomic nucleus. Gravity supposedly have the form of the so called 'graviton' particle. This graviton particle has never been found in the debris of particle accelerators. By linking gravity to the nucleus, science has made a very unfortunate mistake!

In **Documents F1c and F1d**, the author systematically derived all elementary, basic and fundamental forces of protons, electrons and the atoms of the periodic table. In **Documents E3 and E3-1** he derived the origin and the structure of gravity and related 'dark matter' and 'dark energy'.

-) The origin of gravity:

Gravity is not linked to the mass of the atomic nucleus! Gravity, like other physical and chemical forces, is *exclusively* generated by the 'shell' electrons of the atom! These 'shell' electrons generate gravity and other

physical and chemical forces only if the atom is subject to speed in the universe and / or to rotational angular speed. The greater the speed / velocity of the atom, the larger / smaller the linear gravity of these 'shell' electrons. The other forces of the 'shell' electron are related linearly to kinetic energy and quadric to the speed of the atom in the universe!

-) The structure of gravity:

Every type of velocity in the universe generates its own vector / component within the gravitational force. Currently, the earth undergoes somewhere between 5 - 9 different movements in space relative to the center **C** and the **RI**s of galaxies. On earth gravity is built up of 5 - 9 different corresponding gravitational components. Any speed relative to the center **C** of the universe or the **RI**s, generates its own gravitational vector/component separately! See **Figure 1 of Document E3-1**.

The same build-up in speed-vectors also applies to gravitational energy and constants of nature linked to gravity! (The same structure is also applicable to physical and chemical forces, and their bonds; **D1**)

-) Current gravitational formulas expanded with factor $\cos \alpha$:

Because of a) the origin of gravity and b) the balloon-like shape of the universe, the author has radically changed the gravitational formulas of **Newton** and **Einstein**. These laws and gravitational formulas have been modified into the scale of the universe.

The gravity of **Uiterwijk Winkel / Roos** assumes:

- a) the number of existing 'shell' electrons of the celestial objects in question,
- b) the speed / rates of those objects in the universe relative to center **C** of the universe and **RI**s of galaxies,
- c) factor ' $\cos \alpha$ ' has been added as a *correction* to the balloon / spherical-shell-shape of the universe.

Where α is the angle that two objects have mutually on the universe-spherical-shell and relative to the center **C** of the universe. At present, this correction factor $\cos \alpha$ is missing in the gravitational formulas of both **Newton** and **Einstein**.

That lack of $\cos \alpha$ in the current gravitational formulas results in large deficits on the total amount of gravity of the universe and therefore, in a shortage of *mass / matter* and *kinetic and gravitational* energy in the balance of the universe. Science is trying to solve/explain this problem, by introducing concepts like 'dark mass / matter' and 'dark energy'. In reality there is no 'dark matter' nor 'dark energy' in the universe.

-) The Gravitation formulas of Newton and Einstein are only valid within one galaxy:

Although the gravitation formulas of **Newton** and of **Einstein** are basically *wrong*, you can still use them on the scale of one solar system and on the scale of one galaxy. Then, factor $\cos \alpha = 1.000$ or almost 1.000. On the scale of the universe and the universe-spherical -shell, however, factor $\cos \alpha$ must be added to the formulas!

-) The effects of adding factor ' $\cos \alpha$ ':

The result of adding ' $\cos \alpha$ ' leads to a correction in that the gravity *outside the galaxy* diminishes faster than what the formulas of **Newton** and **Einstein** currently predicts. If $\alpha = 90^\circ$ than $\cos \alpha$ has already fallen to zero. From the earth, however, the gravity of the other half of the universe is no longer perceivable even though the visual effects of the gravitation are indeed still visible. Only $1/d^2$ of the Fourth Law of Newton remains the same.

The law of *gravity* and the formulas of **Uiterwijk Winkel / Roos**, show that, *from the earth*, only the gravity in the vicinity of the *Milky Way*, can be measured, in the segment with a radius of about 60° of the universe-spherical-shell relative to **C**. As a result, only tens of percentages of the total available quantity of *matter / mass* and *kinetic energy* in the universe-spherical-shell can be observed! The rest is present but is not measurable.

-) Adding ' $\cos \alpha$ ' results in a more accurate measurement of mass / matter and energy in the universe:

The gravitational formulas of **Uiterwijk Winkel / Roos** result in a universe-spherical-shell with much more gravity. This corresponds to a universe which consists of much more matter / mass and kinetic energy present than what is currently deduced with the gravitational formulas of **Newton** and **Einstein**. With the formulas of **Uiterwijk Winkel / Roos**, the 'mass / matter balance' and 'energy balance' of the universe is much more accurate.

-) No reason for 'dark' mass / matter and 'dark' energy:

According to the author, there is no reason to try and explain the discrepancies in the mass / matter- balance of the universe through the so-called 'dark mass / matter'. The same applies to the energy of the universe.

Question 2: Conclusions:

- 1) When a factor $\cos a$ is added to the gravitational formulas, the balloon-shape universe contains much more mass / matter and, therefore, much more kinetic energy.
- 2) By adding factor $\cos a$, the problem of 'dark mass' and 'dark matter' is almost, if not completely, solved.

Question 3: The nature of Dark Energy:

What is its micro-physical origin, is it constant or varying?

-) Answer:

This universe started about 40 – 45 billion (10^9) year ago with a super cold Little Bang (0 Kelvin). Due to the loss of gravity, the Little Bang black hole, with a radius of 50 – 100 million km, *directly* fell apart into an equal number of protons and electrons as the building blocks to be used to build atoms later. These protons / electrons possess mass, matter, charge, spin and kinetic energy but no gravitation! (As long as the atom is absent, gravity is fully absent).

The protons and electrons arrange themselves into mono-layers of protons and electrons which move and expands at $\frac{1}{3}^{\text{rd}} \rightarrow \frac{1}{2}^{\text{th}}$ of the speed of light c without any form of gravity and gravitational energy. See **Document G6 + Figures**.

The hydrogen atom/molecule is formed from these protons and electrons 5 – 10 billion years later. At that moment, the expansion of the balloon shape universe is about 2.5 – 3.0 billion (10^9) light-years relative to the center **C** of the universe-spherical-shell. With the hydrogen atom / molecule gravity and gravitational energy relative to **C** returns to the universe.

With the construction of hydrogen, an *extremely large amount of gravitational energy* relative to **C** is added to the universe-spherical-shell and to the cycle of the universe. This added energy is completely free of charge!

-) The freely added gravitational energy relative to **C** is nothing less than 'dark energy'.

The freely added gravitational energy is the driving force for each cycle of the universe. The gravitational energy is fully used in each cycle. (The Law Conservation of Energy and Momentum has no value on the scale of the universe).

The cycle of the universe is currently in **phase 23** and about 40 – 45 billion years after the last Little Bang. Gravity decreases the expansion speed and, in time, transforms this energy into the rotational speed of galaxies. In about 350 – 450 billion years from now the expansion speed will be zero. At that point, all the remaining central black holes will rotate at about $\frac{1}{3}^{\text{rd}} \rightarrow \frac{1}{2}^{\text{th}}$ of the speed of light around their own **R1**. After the moment of maximal expansion the shrinking of the universe-spherical-shell starts again.

Document G7 (text) and Document G8 (> 100 figures) www.uitervijkwinkel.eu describes the cycle of the universe. According to these documents, what Science now classifies as the *Big Bang* and the start of the current universe, is in fact already **phase/step 16** of this cycle of the universe.

This Big Bang was not one single explosion but consisted of 4-20 billion (10^9) separate super-Big Bangs which took place simultaneously some 15 – 20 billion year after the super cold Little Bang. Each galaxy started approximately 20 - 25 billion years ago with its own superhot Big Bang!

However, the billions of Big Bangs were preceded by **15 steps** in the cycle of the universe and during a period of approximately 20 - 25 billion years. In this period, only hydrogen and giant rotating spheres of pure hydrogen were present. In this preceding period, the hydrogen spheres developed 5 – 9 different types of rotation amongst themselves.

During the Big Bangs, the previous rotations were maintained. At the start of all the galaxies / Big Bangs they were already rotating much faster than described and predicted according to the *current Big Bang theory*.

However, the observed (apparently too fast) rotations are actually the natural rotational velocities. These rotations have nothing to do with 'dark energy'.

At higher speeds, the galaxies generate more gravity and thus more gravitational energy!

Question 3: Conclusions:

- 1) The so-called 'dark energy' is in fact nothing less than:
 - a) *radial gravitational energy* of the universe-spherical-shell relative to the center **C** of the universe, and
 - b) *transversal gravitational energy* relative to the central black holes in the **RI**s of the galaxies.
- 2) Through modeling the cycle of the universe, the distance relative to center **C** of the universe and hence the scale of gravitational energy relative to **C**, as well the centers **RI** of galaxies, can be determined. Then the total amount of gravitational energy of the universe can be calculated!
- 3) Both gravitational energies cannot be measured quantitatively and are therefore considered as 'dark energy'.
- 4) By adding factor *cos a* to the current gravitation formulas, and considering the universe in the form of a universe-spherical-shell, the mass / matter and energy of the universe adds up.

Question 4: The formation of structures in the universe:

Testing the standard Cold Dark Matter paradigm formation of stars

Answer: All black holes / compact celestial bodies are standard at 0 - 2.7 Kelvin (**Document F1e**). The 2.7 Kelvin is equal to the background temperature of balloon-shape the universe / the universe-spherical-shell. Because of this extremely low temperature, black holes cannot emit light or heat but can freely emit their gravitational force!

The actual temperature of almost 0 Kelvin of the celestial bodies and black holes, can be classified as Super Cold Dark matter. Their direct surroundings, however, are mostly very hot. A *super cold black hole* can be hidden in the core of big stars with a temperature of millions of Kelvin. These black holes are only detectable because of their gravity.

All other super cold matter in the universe, such as super-cold ice and liquid hydrogen and helium, can only be perceived because of their gravity. The author believes that there is no reason for the introduction of concepts such as 'unobservable Cold Dark Matter' other than the super-cold matter present in black holes and other compact celestial bodies.

In **Document F1e** an explanation is given on how, which and under what circumstances, ordinary matter / atoms transform into black hole matter / atoms and black holes. The elements H, He, Li and H₂ cannot be transformed into black hole atoms. These elements cannot be incorporated into a black hole / compact celestial bodies because these three lightest elements / molecules possess none or only one electron pair. The electron shells of hydrogen, helium and lithium cannot collapse from the inside to close to the atomic nucleus! So these lightest elements cannot transform into black-hole atoms.

-) Question 4: Conclusion:

- 1) All black hole atoms are close to the standard temperature of 0 - 2.7 Kelvin.
- 2) All compact celestial black holes are normally super cold, even present inside a star.
- 3) Black holes / compact celestial bodies only contain black hole atoms \geq Beryllium.

Question 5: The validity of General Relativity:

Does it work on all scales, in strong fields ...?.

-) Answer: In **paragraph 4.1**, the author demonstrated that the *Theory of Relativity* and the formula $E = mc^2$ are one of the worst fundamental errors in the current foundation of Science. In **Document G5**, the author elaborates on, at least, 7 inaccuracies in the assumptions of **Einstein's** Theory of Relativity and the related Big Bang theory.

The cycle of the universe (**Documents G6, G7 and G8**) results in absoluteness rather than relativity. The absoluteness will only become apparent after the 29 phases/steps of the cycle of the universe have been modeled and the model is merged into one mathematic universal model which describes the complete cycle of the universe and quantifies the amount of mass, matter and kinetic energy of the universe.

Through this it will become clear that all particles of matter in the universe always have exactly the same *universe clock time*. Within the cycle of the universe *differences in time* are, in principle, impossible. (In two or more identical atomic clocks, measurable 'timing differences' appear as soon as these clocks move, at different speeds, in the universe relative to center **C** and / or **R1**). This is the case with identical atomic clocks, one on earth and one in orbit around the earth. The measured time differences do not have anything to do with the deformation of space and time, but is very useful for GPS!
However, there are more errors in the foundation of Science currently. See **Document J2**, letter to the **Royal Dutch Academy of Science (2008)**.

Question 5: Conclusions:

- 1) Einstein's Theory of Relativity (**G5**) and the related Big Bang theory, represents major flaws in the foundation of Science.
- 2) These flaws should be corrected as soon as possible.
- 3) The other, in total 14, flaws are elaborated on in **Document J2**.

Question 6: The validity of Quantum Mechanics:

Is it modified at short distances, for large systems in the universe?

-) **Answer:** Besides mass, matter and kinetic energy this universe is based on only two elementary forces: electric charge and magnetic spin. The phenomena mass and elementary forces are generated on the lowest Higgs level by kinetic energy. See **document F1a 2014 + Figures**. Gravity is not generated on the lowest Higgs / string / snare level, but only by the 'shell' electrons of atoms as a result of the speed of the atom in the universe. See **Documents E3, E3-1, F1d and F1e**.

In Science, no one seems to realize that, besides gravity, all other physical and chemical forces on the *atom* are also caused by:

- a) the speed of the atom in the universe (→ gravitation) and
- b) the kinetic energy, added by the speed, of the 'shell' electrons. This added kinetic energy creates:
two physical forces and
two chemical forces.

These five forces are generated by the 'shell' electrons of atoms only!

-) **Vectors / components of non-elementary forces:**

Any form of velocity in the universe generates its own vector / component on the five forces as well as in their physical and chemical bonds. Only forces which are equal, and components which have equal speed, attract each other and can form a physical or a chemical bond.

The earth undergoes 5 - 9 different speeds in the universe. However, the oldest speeds in universe are not really known and cannot be completed quantitatively. These 5 - 9 speeds of the earth in the universe can only be derived after the cycle of the universe has been modelled, and specifically that part of the cycle in which we are now.

Due to the 5 - 9 movements of the earth in the universe, the 5 natural forces as well their physical and chemical bonds and physical constants, consist out of 5 - 9 different force components / vectors. Each speed corresponds with its own specific force and binding component. Each bond consists of 5 - 9 separate binding components!

Quantitatively, the structure of the physical and chemical forces and bonds are extremely complex!
The breakdown of the 5 - 9 components also applies to gravity and therefore also to gravitational energy!

All physical and chemical constants of nature and of gravity are also divided into the same 5 - 9 parts as well!

-) All the speeds of the earth in the universe can be deduced from each bond on earth,:

The 5 - 9 velocities of the earth in the universe, is manifested in all physical and chemical forces and their bonds. All the physical and chemical bonds are made up of a complex construction, but they all have the same (speed related) structure.

From each physical or chemical bond on earth, all the velocities of the earth in the universe can be derived. However, it is not easy because the effects are present in all atoms/molecules of the measuring instruments.

-) Modeling all velocities at any moment can solve the problems of quantum mechanics:

By modeling the cycle of the universe, the 5 – 9 velocities of the earth in the universe in the last 10 billion years, can be deduced. This will result in the fact that all physical and chemical bonds can be analyzed quantitatively regarding their strength and binding components.

This will lead to solving the problems which exist in quantum mechanics and in the Quantum Field Theory!

-) The usefulness of the bonds:

Document F1d explains that the physical and chemical forces are generated by the 'shell' electrons of atoms once this atom is subject to movement in the universe relative to the center **C** and rotation centers **R1** of galaxies. All 'shell' electrons of atoms can improve their position by forming as many electron pairs and tetrahedrons of four electron pairs. In this way the added energy, due to the velocity, is transformed into heat.

The 'shell' electrons in the outer electron shell of an atom can improve their *energetic position further by* forming bonds between two atoms, physical and / or chemical and releasing heat / infra-red photons. These physical and chemical forces, formed by 'bonds', are only active on the scale of *nanometers*. These forces are no longer active at a distance greater than micrometers.

-) Only three dimensions (and not 10 -11 dimensions) are present on the most elementary Higgs / string / snare level,:

The 10 - 11 dimensions observed in the measurements of Higgs / strings / snare particles, are not really present on the Higgs / string level. These dimensions are generated on an atomic level and they are the result of the 5 - 9 velocities of the earth and all the atoms in the universe. The 5 – 9 speed dimensions are present in all the atoms / molecules of the measuring equipment used. The effects of the 5 - 9 speeds of the earth in the universe can be found in all physical measurements on earth. They manifest themselves more emphatically as the measuring accuracy increases! *All observations and measurements at Higgs / string level are disrupted by these 5 - 9 velocities / speeds of the earth in the universe!*

The 10 - 11 dimensions at Higgs / string / snare level which were measured, are actually measuring errors! These measured errors lead to wrong interpretations of the obtained data. At the Higgs / string / snare level only three rotational dimensions are present. These three dimensions cannot be determined *quantitatively*.

The speeds of planet earth in the universe are unknown; modeling of the cycle of the universe is needed:

In 2016, the 5 - 9 different speeds of the earth in the universe are not all known *quantitatively*. This knowledge will allow physicists and chemists to breakdown all physical and chemical bonds on earth into their 5 – 9 *force- and bond-components!*

Through modeling the cycle of the universe cycle, all speeds can be determined quantitatively. Through astrophysics the breakdown of all the physical and chemical bindings into their 5 - 9 bond components will be possible. Then an exact interpretation of quantum mechanics will be possible. *With all velocities of the earth known, the quantum field theory becomes a lot easier.*

Question 6: Conclusions:

- 1) By modeling the cycle of the universe all the current 5 – 9 speeds of the earth in the universe can be deduced.
- 2) With this knowledge, all the physical and chemical bonds and physical constants can be broken down into their 5 – 9 speed components. In this way, a basic problem in quantum mechanics will be solved!
- 3) The Quantum Field Theory will also become a lot easier.

Question 7: The problems not solved by the Standard Model of particles:

Particle types, masses and mixing, unification of forces

-) **Answer:** In **Document F1a 2014**, the author derived his 'low-energy' *Standard Higgs / string / snare Model* with only *four* Higgs / string / snare particles; a) two Higgs for building the proton/anti-proton and b) two Higgs for the electron/anti-electron.

Two by two these four Higgs particles are completely opposite regarding:

- a) mass,
- b) electric charge,
- c) magnetic spin,
- d) kinetic energy and
- e) spatial volume.

Both Higgs of the proton and those of the electron are *super-symmetrical and can thus be considered each other's anti-particle*.

At the very lowest level of the four Higgs particles with mass and anti-mass, *annihilation* is not possible! (Mass cannot be transferred into energy!) See **Figures 1-6** of **Document F1a 2014**. Annihilation is only possible at a much higher level of matter and anti-matter. This annihilation results in photons (majorana particles **F1b**) and release rotational energy of $E = mc^2$.

-) **Five underlying levels:**

Regarding the proton / electron, the author distinguishes four underlying levels of 'incomplete' matter particles:

- 1) two proton quarks and two electron quarks (**F1c**),
- 2) two infra-red photons and two light photons which move with a maximum speed of light linearly (**F1b**),
- 3) two light neutrino's and two infra-red light neutrino's with a maximum speed of light linearly(**F1b**) and
- 4) two proton Higgs / strings / snares and two electron Higgs / strings / snares (**F1a 2014**).

At each level there are always up to 4 'low-energy' particles possible!

These 'low-energy' particles are not found in the debris of particle accelerators!

-) **Question 7: Conclusions:**

- 1) The 'low-energy' Standard Model by **Uiterwijk Winkel** includes only:
 - two super-symmetric Higgs / strings / snares of the proton and
 - two super-symmetric Higgs / strings / snares of the electron.
- 2) This simple 'low-energy' model does not comply with the current complex 'high-energy' scientifically accepted Standard Model with three levels and 17 particles obtained by collisions in particle accelerators!

Question 8: The existence of super-symmetry:

Does this framework for new physics appear at accessible energies.....?

-) **Answer:** **Figures 1-6 Document F1a 2014** www.uitewijkwinkel.eu shows the structure of the Higgs particles, strings / snares and the structure of the super-symmetry of these particles. These figures show the super symmetry in nature; something Science has been searching for a long time. The four super-symmetric elementary Higgs particles have the most basic physical characteristics:

- a) mass (m),
- b) electric charge (L),
- c) magnetic spin (M),
- d) kinetic energy and
- e) spatial volume.

The four super-symmetric 'low-energy' Higgs / string / snare particles are not found in the debris of particle accelerators between 'high-energy' debris of the colliding matter obtained.

-) **Question 8: Conclusions:**

- 1) The 'Standard Higgs Model' by **Uiterwijk Winkel** shows the 100% super-symmetry in the Higgs/strings/ snares. In universe all mass and matter is based on these four Higgs particles.
- 2) This super-symmetry is not found between the 'high-energy' collision products in particle accelerators.
- 3) The four 'low-energy' Higgs by **Uiterwijk Winkel** are only possible in theory. They cannot be supported by experiments!

Question 9: The solution or QCD: Quantum Chromo Dynamics:

Can it be solved analytically, for example, with a string model?

Answer: The figures associated with **Documents 2014 F1a, F1b, F1c and F1d**, show all particles that could be released during collisions in particle accelerators. These particles normally are all in the 'low-energy' state. These particles with their physical characteristics like mass (m), charge (L), magnetic spin (M) and volume can be filled in quantitatively. Because the charge and magnetic spin is standard, the color-coded red, green and blue is made redundant.

By modeling the cycle of the universe, all the movements of the earth in the universe can be determined both qualitatively and quantitatively. With this data, theoreticians can solve almost all the problems in quantum mechanics and the Quantum Field Theory, both *qualitatively* and *quantitatively*.

-) **Question 9: Conclusion:**

- 1) The construction of all possible particles can be given in terms of the Higgs particles. The color coding and the QCD can now be removed.

Question 10: The nature of the string theory:

What is it?

Answer: Document **F1a 2014 ' Standard Model 2014'** (Higgs / strings / snares), **F1b** (Majorana particles), **F1c** (Proton/electron), **F1d** (Elements of the periodic table) and **F1e** (Black hole atoms) and **Figures 1 – 24** elaborate on how the universe is organized from the very lowest level of Higgs / strings / snares up to

- 1) the proton / electron,
- 2) the elements of the periodic table and
- 3) the periodic table of black hole elements.

The structure of the proton / electron can explain how, in the universe, the transition between mass and matter is regulated by adding $E = \frac{1}{2} mc^2$ rotational energy to the construction of the photons and neutrino's.

Neutrino's and photons have a maximum live span, in the universe, of about 14 – 18 billion years. Within that period, all neutrinos and photons are transformed into protons, electrons and finally into hydrogen again! All photons in the universe, older than 14 – 18 billion (10^9) years, have disappeared and with them, all information of the preceding period of the universe!

-) **Question 10: Conclusions:**

- 1) With the above mentioned documents and figures, the author realizes all possible 'low-energy' elementary Higgs / string /snare particles and thus the structure of neutrinos, photons, quarks and finally the proton and the electron. Protons and electrons are transformed into hydrogen exclusively.
- 2) All older information of the universe is transformed into protons and electrons, hydrogen and finally, elements of the periodic table.
- 3) The universe older than 14 – 18 billion years, is not observable anymore. This is the ultimate time horizon of the universe. This older universe is only 'visible' through the mathematic modelling of the universe and its energy-neutral cycle.

Question 11: The nature of space and time:

Are they fundamental or emergent phenomena?

-) **Answer:** In **Document G2** the author elaborates on the phenomena of space and time. Time and space are inextricably and mutually linked to the cycle of the universe and thus, to kinetic energy. Space, time and kinetic energy first caused the expansion and then finally the contraction of the universe. In our daily lives time, space and kinetic energy have been separated.

That is not possible on the scale of the universe. In the universe, time, space and kinetic energy are not separate independent physical parameters but these three parameters are always fully integrated.

During the cycle of the universe all locations in the universe-spherical-shell always have exactly the same 'universe clock time'. Differences in this absolute (universe clock) time are not possible! Within this cycle of the universe time always unwinds linearly as 'universe clock time'.

This is not the case with the distance of the universe-spherical-shell relative to the center **C** of the universe. The spring tension results, first in a fairly quiet and predictable expansion speed, followed by a fairly balanced contraction of the universe-spherical-shell. The same 'universe clock time' applies everywhere in the universe. The development of time and space in relation to kinetic energy can be modelled mathematically and described by the 29 phases/steps of the cycle of the universe / Taetucycle.

A more precise definition of space of the universe versus time (universe clock time), kinetic energy and gravitational energy will only be realized if all 29 phases/steps of the cycle of the universe is modelled *mathematically* and all the 12 relevant parameters are quantified for each step and the complete cycle. Time and space both have a maximum and minimum value. Time and space are not infinite.

-) Question 11: Conclusion:

- 1) A model-based interpretation of the universe and the cycle of the universe is needed to establish the relationship between time, space, kinetic energy and gravitational energy clearly and to fill it in *quantitatively*.

Question 12: Are the laws of physics unique:

Perhaps they are statistical accidents

-) **Answer:** After the Little Bang the universe starts with an equal number of ordinary protons and ordinary electrons. These building blocks of atoms possess their own elementary characteristics: mass (m), elementary electrical load (L), elementary magnetic spin (M), kinetic energy and a spatial volume. During the first 5 - 10 billion years the universe consists of loose protons and electrons only. Any form of atoms / molecules are missing.

-) At first the forces and number of laws increase:

During this 'atom-free' period, gravity/gravitational energy is absent, as well as all kinds of non-elementary physical and chemical forces because these forces are linked to the 'shell' electrons of atoms and the speed of the atoms in the universe. In this period, the van der Waals / London force is also absent and, therefore, all physical phase conditions and the phenomenon of temperature. Correspondingly, this period also lacks the non-elementary physical laws and the formulas associated with it. In the first 5 – 10 billion years, the number of *physical laws in the universe is minimal!*

After 5 - 10 billion years, the proton and electron together form the hydrogen atom, which is directly followed by the formation of the hydrogen molecule. The hydrogen atom / molecule generate, not only gravity and gravitational energy but also two physical forces, one chemical force and temperature. This causes the phase states and temperature to return. With the formation of the hydrogen atom / molecule the number of physical laws in the universe increases.

The whole range of nature's physical and chemical forces and the connected laws is only completed after the hydrogen supernovas or Big Bangs which take place about 10 -15 billion years after the formation of hydrogen and about 20 – 25 billion years ago. After these Big Bangs (one per galaxy) one physical and one chemical force

is added. See **Document F1d** for the forces generated by ordinary atoms and **Document F1e** for the forces on black hole atoms.

-) Later on the forces and laws decrease:

For the next billions of years the universe-spherical-shell will be reaching its maximum expansion. All common atoms are then captured in one of the central black holes of one of the galaxies. Some forces of *ordinary atoms* will disappear again and, therefore, also the corresponding physical laws and constants of nature. At the end of the expansion all atoms are transformed into black hole atoms with a limited number of forces (**F1e**) and laws.

-) Destroying all non-elementary forces at the next Little Bang:

At the time of the Little Bang, all black hole atoms fall apart into protons and electrons. Only the elementary charge and elementary magnetic spin and forces remain as constants throughout the cycle of the universe. Only the constants of electric charge and magnetic spin are the real constants in the universe!

The number of forces causes the *constants of nature* to also vary during the cycle of the universe. The basic physical and chemical forces and gravity are related to the speed of the atoms in the universe quantitatively! The constants of nature also change with the speed of the atoms in the universe! Both the speed and the number of speeds change very slowly in quantitative terms. All the related speed / kinetic energy forces, and their *related components* and *physical constants of nature*, change extremely slowly in time! See **Document G10**.

This very slow quantitatively changing speed components do not apply to the elementary charge and magnetic spin of the proton and the electron!

-) Question 12: Conclusions:

- 1) After the Little Bang, only protons and electrons are present. The number of forces and physical laws is minimal. Only elementary charge and spin with their natural *constants*, are present.
- 2) The first extension of forces and physical laws will take place when hydrogen is formed.
- 3) The number of physical laws increases after the Big Bangs and the fusion of hydrogen with the elements of the periodic table and thus, the number of the constants of nature.
- 4) All *non-elementary constants of nature* are only a momentary constant. During the cycle of the universe they change very slowly! Modelling the cycle of the universe is absolutely necessary!
- 5) At the end of the expansion, all galaxies are fully absorbed and integrated into their central black holes. Only the physical laws of black hole atoms and their physical constants of nature remain.
- 6) The number of physical and chemical forces and their components fluctuate during the cycle of the universe. The number of physical and chemical laws and constants of nature change accordingly.

Question 13: Can kinematics, dynamics and conditions initially be separated?

Perhaps they cannot be disentangled.....?

-) Answer: The universe goes through a regular, energy-neutral cycle of 29 phases/steps which lasts about 2 – 3 trillion (10^{12}) years. Each of these 29 phases/step can be described mathematically and in detail by using the 12 parameters of the universe. All steps can also be modeled mathematically and therefore quantified in detail – this can explain the whole past as well the whole future of the universe!

In **Documents F1a 2014, F1b, F1c and F1d**, the author derived the system of forces on the Higgs particles, protons / electrons and atoms in relation to the nature of matter and the 5 - 9 movements of the atoms within and between the galaxies. During the cycle of the universe, only the Law of the *Conservation of Mass applies*.

The Law of Conservation of Energy and Momentum however does not apply!

About 5 – 10 billion year after the Little Bang the emitted protons and electron transform into hydrogen. With the hydrogen atom / molecule gravity is generated and by that phenomena gravitational energy has been added.

This gravitational energy / 'dark energy' relative to the center C of the universe is added 100% 'free of charge'! How is this possible?

-) After the Little Bang only loose protons and electrons are present:

At the Little Bang (**G6**), approximately 40 – 45 billion (10^9) years ago, the super Little Bang black hole fell apart into loose protons and loose electrons which arranged themselves into mono-layers of protons and electrons. At this Little Bang, all atoms disappeared and thus all gravity and all gravitational energy in the universe!

-) When the hydrogen atom is formed, gravity and gravitational energy return:

Approximately 5-10 billion years after the Little Bang, the liberated protons / electrons formed the hydrogen atom / molecule. With the formation of the hydrogen atom / molecule, gravity and gravitational energy relative to **center C** of the universe returned to the universe.

By then, the balloon-shaped universe had already expanded evenly, and had a range of 2.5 - 3 billion light-years relative to the fixed **center C** of the universe. Because gravity was absent, the expansion of the universe-spherical-shell, up until then was completely 'free of charge'!

-) With the 'added' gravitational energy the Laws of Conservation of Energy and Momentum, do not apply to the scale of the universe:

With *gravity*, an enormous amount of *gravitational energy* with respect to the center **C** is freely added to the universe and to the cycle of the universe. This freely added gravitational energy disturbs the Laws of Conservation of Energy and Momentum completely! They have no value on the scale of the universe! In all systems caused by fusion, such as stars, the number of 'shell' electrons decreases and, therefore, also the amount of gravity and gravitational energy!

-) 'Dark energy' = gravitational energy:

The gravitational energy relative to the center **C** of the universe and **RI** of galaxies are nothing less than the questioned and missing 'dark energy'! The gravitational energy creates a huge increase in kinetic energy and momentum, approximately some 5 – 10 billion years after the Little Bang and at the beginning of the universe.

-) Gravitational energy is the driving force behind the cycle of the universe:

In each cycle, the amount of gravitational energy added with the formation of the hydrogen atom/molecule, forms the driving force in order to complete the cycle. The freely added gravitational energy ('dark energy') is partly used during the fusion in stars and completely used during the contraction of the universe. This energy is used to inhibit the acceleration of the contraction of the universe-spherical-shell to a constant speed of about 100 – 150 Mm/s.

Each cycle of the universe that develops, is fully energy-neutral. Each cycle of the universe starts and ends with the exact same amount of matter / mass, the same amount of kinetic energy, without any atoms, gravity and gravitational energy! The Laws of Conservation of Energy and Momentum apply only at the beginning and at the end of the entire cycle!

Modeling the cycle of the universe will show that gravity, gravitational energy and the physical and chemical forces are related to the speed of the atoms in the universe. Forces are mutually and quantitatively related to kinetic energy and the rotational speeds in the universe.

-) Question 13: Conclusions:

- 1) On the scale of the universe, only the Law of Mass Conservation is correct and valid.
- 2) The Laws of Conservation of Energy and Momentum do not apply during the cycle of the universe. With the formation of hydrogen atoms / molecules, gravity and gravitational energy are freely added to the cycle of the universe.
- 3) The Laws only apply at the beginning and the end of each cycle of the universe. They stop at the moment that hydrogen is formed.
- 4) The gravitational energy relative to **C** (and, currently, relative to the **RI**s of galaxies) is actually the sought after 'dark energy'.

Question 14: Are there new states of condensed matter?

Not just the usual Fermi liquids

-) **Answer:** In document F1d www.uitewijkwinkel.eu, the author systematically derived all physical, chemical and mechanical forces on the elements of the periodic table in relation to the speeds of atoms in the universe and the 'added' kinetic energy of atoms and their 'shell' electrons. (Universe wide the periodic table is the same!) Based on the system of forces and bonds (**Document D1**), all theoretical and conceivable forms of **Fermi / Newtonian** fluid materials and divert solids can be derived, as well as the mechanism and the essential structure of the **Bose / Einstein** condensation. New states of matter will not manifest; maybe some hybrids.

-) **Question 14: Conclusion:**

1) On the basis of the forces generated by atoms, new states or phase states are not to be expected.

Question 15: The understanding of complexity in computing:

Is there something beyond the artifacts or approximations

Answer: The processors in today's computers work on circuits that are affected by electrons. Future developments will result in ever smaller and thus quicker processors with more computing / processing capacity. The current (2016) processors are fast, accurate and have a huge computing capacity. The development of computer chips is finite, but will continue. Processors for quantum computers are an entirely different development. These processors operate in a completely different way than the conventional computer chips. From all appearances, these processors can count more parallel. Future developments will probably enable computers to operate under super-conducting circumstances.

Biochemical processors:

In the long term, computer chips working on biochemical chips such as the citric acid cycle are expected. The citric acid cycle and fatty acid cycle work either clockwise or anti-clockwise depending on the driving force. Therefore, these cycles are to be regarded as the versatile molecular biochemical computer chips of living matter.

-) **Question 15: Conclusions:**

- 1) The development of conventional computer chips will continue.
- 2) This development is finite.
- 3) The author has high expectations of quantum computers and biochemical chips.
- 4) The development of chips on the basis of the citric acid and the fatty acid cycle are to be expected in the future.

Question 16: The construction of a quantum computer:

One with 10,000 qubits would be useful

-) **Answer:** Such computers are possibly if we do not go out from the assumption of electrons (complete matter) but of much smaller particles or incomplete *matter* like photons. The development of qubits for quantum computers is progressing. The author is somewhat skeptical about quantum computers for the everyday use by private individuals. The processors of quantum computers will have to comply with the authors Min/Max 1 Principle. See **document F1f**.

-) **Question 16: Conclusion:**

- 1) Quantum computers based on photons are possible if the processors meet the Min/Max 1 Principle. (**Document F1f**)

Question 17: The existence of a super-conductor at room temperature:

It would make a technological revolution...

-) **Answer:** The majority of electrons are present as 'shell' electrons of atoms. For energy reasons:

- a) all 'shell' electrons form electron pairs; through which heat is released and
- b) electron pairs arrange themselves in sub- electron shells with one electron pair or with tetrahedrons with four electron pairs; then heat is released too.

The two 'shell' electrons in the electron pair mutually repel each other through their similar charge and similar and equal magnetic spin.

Despite this repelling, both electrons, together, form a real covalent (chemical) bond in the form of *a pair of electrons*. This covalent bond between the 'shell' electron pair is a bit strange because of the mutual repelling via the charge and spin! Through this chemical covalent radical bond the single 'shell' electrons have a more energetic and favorable position than two separate 'shell' electrons. See **Document F1d + Figures**.

-) **The origin of electrical resistance:**

When electrons flow through a metal wire, a part of the electron-pairs in the outer electron shell of the metal atom has to be broken down into single electrons temporarily to make the transport of single electrons possible. This results in the formation of a new pair of 'shell' electrons in the next atom, wherein one electron proceeds to the next atom etc. This brings about a conduction of electrons through matter. This continuous whole or partial split of the electron pairs requires energy, resulting in an electrical resistance. This leads to heat development and consumption of energy and costs. Super-conductivity significantly reduces the electric resistance and costs.

Super-conductivity:

Super-conductivity only occurs when the entire transport of electrons takes place in the form of *electron pairs* and not as individual electrons or partially split electron pairs. In the case of super-conductivity, the electric resistance is almost completely gone and, with it, the development of heat.

It is already great that super-conductivity in metals occurs near absolute zero and in special alloys at very low temperatures of about 100 Kelvin. Maybe the temperature limit for super-conductivity can be stretched slightly upwards.

Above the critical temperature, the atomic nucleus vibrates too much. Then, the electron shells are greatly influenced by the vibration of the atom core. This disturbs the transport by electron pairs, which becomes impossible. Super-conductivity then ends because the electron transport goes back to individual electrons again.

At room temperature (293 Kelvin) there is no super-conductivity. The physical vibration of the atom-nucleus electrical super-conductivity at room temperature will not happen.

Question 17: Conclusion:

- 1) The author does not expect super-conductivity at room temperature – not even in the distant future.

Question 18: The existence of a theory of biology:

Does it have an underlying conceptual structure, like physics?

-) **Answer:**

All matter in the universe is based on the same elements of the periodic table:

In documents **F1a 2014, F1b and F1c + Figures**, the author explains that all matter in the whole universe /universe-spherical-shell is only based on:

- a) 4 Higgs /strings / snares,
- b) 4 neutrinos
- c) 4 photons resulting solely in the construction of
- d) the proton/anti-proton and the electron/anti-electron.

(In fact, in the universe only protons and electrons are available as *building blocks* for atoms).

During the cycle of the universe all protons and electrons are transformed into hydrogen. All other atoms/elements are constructed from hydrogen during fusion and therefore they are all constructed solely out of protons and electrons!

For energy reasons and throughout the universe, this fusion of hydrogen only results in atoms/isotopes arranged according to the elements of the period table. These atoms and isotopes generate the same system of forces and bonds throughout the universe; (**F1d + Figures**).

On earth this system of elements and molecules, forces and bonds have evolved into living matter! All living matter on earth is based on the biological schemes of the *Biochemical Pathways (BP)* by **Gerhard Michal** and in the compatible *Recon2 Model*. Only BP is found on earth!

-) **Top-down analysis of the Biochemical Pathways (BP):**

In Document B1 Uiterwijk Winkel has worked out a *top-down analysis* of the biochemical basics of living matter on earth. For his analysis, he used the schedules of the *Biochemical Pathways (BP)* by **Gerhard Michal et al.** (Currently the *Recon2 model* is available)

-) **Top-down analyze:**

From this biochemical schemes, it shows that the biochemistry of all living matter on earth is fully based on the carbon chemistry containing *a) the citric acid cycle, b) the fatty acid cycle and c) the amino acid synthesis.*
Document B1: Chapter 6. (Only Dutch available; the English translation is under construction).

These three 'biochemical' chips are the core of the biochemistry of all living matter on earth. This so-called carbon chemistry consists completely of molecules build-up from the elements C, H, O, N, S and P. However, the question still remains whether it is possible to build a biochemistry for living matter from the elements of the periodic table that is structurally different from the biochemical systems of Biochemical Pathways? Can living matter be build-up of solids, gases and liquids other than using water as the reaction-medium?

-) **Bottom-Up deduction:**

To answer this question, the author also performed a *bottom-up deduction* starting from all stable elements of the periodic table. On the basis of this periodic table, the same collection of approximately 5 - 10 billion molecules are formed throughout the universe. From the complete set of possible molecules, and through a system of 25 consecutive steps, the author has filtered out:

- a) which molecules fit into the biochemistry of living matter,
- b) which reaction media (gas, liquids, solids, etc.) are appropriate for the completion of the reactions,
- c) which reaction conditions are required for the settlement of such a system of bio-chemical reactions.

See **document B1: Chapter 7.**

-) **Intersection of top-down analysis / bottom-up deduction with the 6 Laws of Biochemistry:**

The bottom-up analysis cuts through the top-down deduction at some point. This intersection is visually represented in the diagrams of the *Biochemical Pathways* and the *Recon2 model*. This means that the biochemistry of all living matter in the universe is based on the Biochemical Pathways.

Based on: 1) the analysis of the Biochemical Pathways and 2) the deduction of all biochemical systems of living matter, the author derived and formulated the **6 Laws of Biochemistry for Living Matter**. These Laws apply to all common forms of living matter throughout the whole universe. See **Documents B1, B2, B3 and B4.**

-) **All living matter in the universe is based on exactly the same biochemistry as on earth:**

The 6 Laws results in the fact that the biochemistry of all living matter in the universe is based on the exact same carbon chemistry as on earth, with water as the primary, necessary and only accepted reaction medium for biochemical reactions. All living matter in the universe is, therefore, based on exactly the same biochemistry as found in living matter on earth!

The biochemistry of living matter on earth is unique but at the same time the only standard for the biochemistry of all conceivable forms of life elsewhere in the universe! All living matter is based on carbon chemistry, the citric acid cycle, the fatty acid cycle, the amino acid synthesis and water as the indispensable reaction medium.

-) **Living matter is based on RNA and DNA everywhere:**

All life forms are subject to wear and tear and are therefore, by definition, mortal. Reproduction is essential to avoid extinction. The sexual and a-sexual reproduction is also imperatively based on the same system of RNA or DNA throughout the universe.

-) Living matter develops spontaneously on all planets which have sufficient water and land:

Since the periodic table only contains one biochemical system - the BP, the development of living matter follows an entirely spontaneous process on all planets similar to earth. In each galaxy, about 100 – 1,000 planets / moons with living matter can be expected. Living matter is extremely rare in a galaxy. Nevertheless, there are billions (10^9) of planets with living matter throughout the universe.

The main conditions for planets with life, are:

- a) a magnitude similar to that of the earth with the same distance, in the life zone, to the star,
- b) a rotating iron core, and with that a protective magnetic field and own rotation of 15 – 30 hours,
- c) a relatively low air pressure (only 0.8 - 1.2 bar) consisting of mostly nitrogen,
- d) oceans (covering 20-80%), land (covering 80-20%) and
- e) ice caps at both poles.

-) Globally everywhere the same species:

Throughout the universe and on all 'earth-like' planets, with sufficient water, similar single-celled life forms, as found on earth, from the biochemistry of the BP will be present: viruses, bacteria, bacteriophages, fungi, algae, zooplankton and multi-cellular plants and eventually, similar higher organisms, such as plants and animals.

-) Question 18: Conclusions:

- 1) The biochemistry of all living matter in the universe is based on exactly the same physical, chemical and biochemical principals and laws.
- 2) All living matter in the universe is based on the biochemistry which is exactly the same as found on earth.
- 3) Living matter develops automatically and spontaneously on all planets similar to the earth of which there are about hundred to thousand planets in every galaxy.

Question 19: Deducing physical forms from genomics:

Can one deduce the shape of an organism from its DNA sequence ?

Answer: All the properties and characteristics of an organism lie in its biochemistry fixed in its DNA / RNA, and in the sequence thereof. The final shape of each organism is also firmly established in the DNA. All other characteristics of an organism can also be derived from its DNA.

Question 19: Conclusion:

- 1) All characteristics of living matter can be found in the DNA/RNA.

Question 20: The physical basis of consciousness:

New physics, emergent phenomena, or ?

-) Answer: In humans and in animals the brain regulates all activities in the body. Lower animals without a brain are controlled from the nerve endings. In actual fact the brain functions as one big biochemical computer with physical and bio-chemical input and output in all vertebrate animals.

The driving force of the brain is generated from the conversion of glucose to CO_2 and H_2O via the *Krebs or Citric acid cycle*. The citric acid cycle can be considered a biochemical processor releasing electrons. The electrons are used for consciousness, transmission and processing of information and for the guiding of the movements and biochemistry of the organism.

The brain operates on biochemical principles and biochemical computer chips built around the *citric acid cycle* and the breakdown of glucose! The brain works differently than non- biochemical processors and the memory chips in the current generation of computers.

Currently, the human brain is more evolved than all other brains. The brain has a huge memory capacity for all kinds of information. The structure of the 'biochemical' memory can be traced and filled in. Biochemical chips are possible based on the *citric acid cycle*.

Consciousness is a condition in which the brain is active and responds to the input from the senses. This input leads, after processing, to an output in the form of a reaction. The input / output of the brain are, to a great extent, comparable to that of the current computer chips.

Thinking is a digital process:

According to the author, thinking, processing information and memory in humans and animals work like a full digital system of decisions based solely on the choice of *yes or no*. In this respect the brain works in the same way as the ordinary chips in computers.

These principles of the brain and the citric acid cycle are both suitable for use in biochemical chips and in computers. Such computers will then function purely on biochemical processors similar to those operating in the brain. These biochemical chips can only be achieved if one has an exact idea of how the management in the brain is regulated and how its memory operates.

Question 20: Conclusions:

- 1) The brain of humans and animals rely largely on a digital system with the choices of *yes or no*.
- 2) The way in which the digital brain thinks and works can be compared to computer chips.
- 3) The development of biochemical chips and biochemical computers will undoubtedly lead to new research field in Science.

Question 21: Could a computer become a creative physicist?

Would we train it, starting from Newton and Einstein?

Answer: Both **Newton** and **Einstein** have added significant contributions to Science and especially to the development of pure 'scientific' thinking. The author has great admiration for both scientists. The theories of both scientists were unfortunately based on fundamental errors. Currently, many decades later, these errors have been discovered and recorded by the author. See **Document J2**.

It is not a good idea to train a computer if it is based on fundamental errors or wrong ideas. The author does not consider the current and future computers to be more creative than their designers and programmers. That should remain as such.

Computers have endless patience, they are tireless, do not become irritated quickly and they are much more accurate than their 'master'. The author suggests to start with computers that can function creatively and can create a painting or a sculpture independently.

-) Question 21: Conclusions:

- 1) The world and humanity should not overrate computers. They are only necessary tools.
- 2) The world is increasingly threatened by overcrowding, shortage of space, lack of raw materials, energy, water and food. If this does not stop, humanity is racing to a complete ecological and finally economic disruption that will end in an awful collapse of mankind.

Question 22: How to avoid balkanization of physics?

People from different fields should understand each other

Answer: Despite public relations, communication and promotional films, the balkanization and hostile attitude are caused by the growing distance between ordinary citizens, politics and Science. The essence of Science has distanced itself from the daily lives of citizens and trends in politics.

In the end, politics decide about the funding of costly research. Within the Science, the different disciplines have reached specialized levels which make communication difficult. A few things can already be addressed:

- a) Through the development of a *mathematical model* of the cycle of the universe (**G7 + G8**) all the speeds of the earth in the universe can be quantified in detail. This knowledge can simplify quantum mechanics and the Quantum Field Theory, and

b) The elimination of a number of inaccuracies in the foundation of science, **Document J2**.

If this, very painful process, is not addressed, Science will meet an ever increasing number of problems, such as the origin of gravity, 'dark matter' and 'dark energy' in the future. After a mathematic model of the universe has been constructed, the basics of Science will become much clearer. Only then can the errors, which have been identified, be removed and the existing literature be updated.

-) **Question 22: Conclusions:**

- 1) It is necessary to adapt the foundation of Science by removing the errors (**J2**).
- 2) No one seems wants to take the lead in removing these, at least 14 errors, in the foundation of Science.
- 3) If nothing is done Science will get stuck in these inaccuracies for ever.

Question 23: The scope of reductionism:

Is it universal, or do new laws emerge in complex systems?

-) **Answer:** No new laws are expected at the most basic Higgs level.

=) **No separate particles but integrated cohesion and unity:**

In **Document F1a 2014 + figures**, the author presents his 'low-energy' '*Standard Higgs / string / snare Model 201*'. This Model shows that all matter is based on only *four* most elementary Higgs particles;

- a) two super-symmetric particles of the proton and
- b) two super-symmetric particles of the electron.

The four Higgs particles only have five basic and *totally integrated* characteristics:

- a) mass,
- b) elementary electric charge (L),
- c) elementary magnetic spin (M),
- d) kinetic energy that results into three rotations around their three axes and
- e) a special fixed volume. (This elementary volume means that a singularity is absolutely impossible!)

The proton Higgs and the anti-proton Higgs cannot annihilate each other. This is the same for the electron Higgs and the anti-electron Higgs. **Thus, fundamentally, mass cannot be transformed into energy!**

With both the proton Higgs and the electron Higgs constructions are only possible until the maximum of the proton / anti-proton and the electron / anti-electron (**F1b** and **F1c**).

The five basic characteristics are always found in a solid consistency and a fixed quantitative ratio of mass, charge, spin, kinetic energy and volume. These five characteristics form an inseparable unity. The *four* Higgs particles are the smallest building blocks of mass and matter. The author distinguishes only one 'low-energy' level. This is considerably less than the up/down level of the current Standard Model with 126 GeV for the proton Higgs particle!

In the acceptable Standard Model of 17 particles, three quarks and three energy levels are distinguished. In addition, forces and energy-transmitting particles such as W- and Z- bosons, the photon, the gluon, the graviton and Higgs mass particles are also distinguished. In this Standard Model (2016), mass is linked to a separate Higgs particle, and the quarks, bosons, fermions, electrons, gluon and graviton mass are presented as separate variables.

The author assumes the four integrated units of mass i.e. electric charge, magnetic spin, kinetic energy and volume! The author does not distinguish separate gluon nor any force or mass carrying particles like bosons, fermions and Higgs.

The graviton is found at the atomic level and is not generated at the most elementary Higgs level.

-) **Separate force carrying particles are not really needed:**

The elementary charge and spin are, according to the author, equal to the gluon and the W- and Z- bosons! Mass is inherent to the Higgs particle. Gravity is only generated by the 'shell' electrons of atoms and not by the elementary Higgs mass particles.

The two 'low-energy' elementary proton Higgs by **Uiterwijk Winkel** do not match with the 'high-energetic' proton Higgs / mass particle of 126 GeV found at CERN in 2014! The mass of the two super symmetrically Higgs particles of the proton by **Uiterwijk Winkel** is much lower than the 126 GeV.

-) **Route: Higgs level ↔ majorana particles ↔ proton / electron:**

According to the author, only the proton/anti-proton and the electron/anti-electron can be built from the *four* Higgs particles throughout the universe. See **Document and F1b and F1c**.

-) **Physical Laws:**

The *physical laws* regarding:

- 1) elementary mass,
- 2) electric charge,
- 3) magnetic spin and
- 4) kinetic energy linked to rotation, only apply on the level of the proton and the electron and lower.

The surplus of kinetic energy results in the speed of the object. The other physical, chemical and mechanical forces, which include gravity, manifest themselves only on the atomic level, combined with the speed of the atoms / molecules in the universe. These forces are not generated at the lower, non-atomic, level.

The number of *most elementary laws* is therefore limited. These laws are only linked to mass, charge, spin and kinetic energy. These forces and elementary laws are strictly separated from the other forces of the atom and the laws of atoms / molecules!

-) **Atomic / molecular level:**

The proton and electron form hydrogen. From the hydrogen and through nuclear fusion, all normal and black hole atoms are formed. In **Documents F1d and F1e**, the author outlined the merging process and systematically deduced all forces which exist *in the atoms* of:

- a) ordinary matter,
- b) black hole matter and
- c) and anti-matter (**C4**).

All the forces are the result of velocity or changes in the speed and direction of *atoms* in the universe. The emergence of forces on the atom is never considered from this angle!

-) **The number of laws is not constant:**

Atoms and molecules generate a number of, non- elementary, physical and chemical forces besides the charge and spin of the proton / electron. (When the speed in the universe is zero, all the non-elementary forces and related laws disappear)

Ordinary atoms / molecules and speed result in more laws present than those present on the most elementary level of the proton /electron and on the level of elementary particles.

Black hole atoms and black holes have their own (limited) range of physical forces and laws (**F1e**).

The range of physical laws of the atoms / molecules is directly linked to the number of physical and chemical forces which operate, in the universe, due to the speeds of atoms relative to center **C** and centers **R1** of galaxies! In complex systems, these physical forces and laws are not created. There are no new and fundamental physical laws because all elementary forces are already known.

-) **All elementary forces and constants of nature remain constant during the cycle of the universe:**

Only the elementary mass, electric charge and magnetic spin of the proton and of the electron do not change quantitatively in time. The associated constants are the only real constants in time. The same basic physical constants and laws apply on the previous and the next universe.

-) **All non-elementary forces and constants of nature change, in time, with the speed of the atom in universe:**

During the cycle of the universe, differences in the number of the active physical and chemical forces on atoms and connected laws can be distinguished. The different (5 – 9) speeds of atoms change extremely slowly and quantitatively. The result is that the strength of the forces and bonds of atoms and molecules and most of the constants of nature, which are generated by speed, changes correspondingly! See **Document G10**.

Several speeds disappear during **step 23** (the current step) of the cycle of the universe. And with it, the associated forces, force components / vectors and part of the constants of nature. This process of change will become quite clear after the cycle of universe has been modelled.

-) **Question 23: Conclusions:**

- 1) There are different levels of physical laws. The laws of nature at the most basic Higgs level does not change quantitatively. The laws of the elementary charge and spin are basically unalterable.
- 2) All other basic laws of nature are subject to change because the speed of the atoms in the universe changes very slowly in time. The associated constants of nature also change. These constants of nature disappear completely at the end of **phase 23** of the cycle of the universe.

Question 24: The role of the theory:

Does it lead or follow experiments?

-) **Answer:** Both. The current development of the theory is hampered by inaccuracies in the foundation of science. These inaccuracies include aspects such as the *Theory of Relativity*, $E = mc^2$ for $m = \text{mass}$, the *Big Bang theory*, the *Pauli prohibition*, the system of four *fundamental forces* and *neutrons in the atom nucleus* etc.

The system of physical and chemical forces on protons/electrons and on atoms is not described in relation to the speed of the atom in the universe! The current Standard Model by **Veltman /'t Hooft** however was derived from 'high-energy' particles found in the collision products of particle accelerators. The measured particles are found only in particle accelerators and are not found in a 'low energy' universe consisting of and based on only four 'low-energy' Higgs! (**F1a 2014**).

The current *Standard Model* leads to inaccuracies in the theory which causes erroneous interpretations of the obtained data and then translates the measured energy into mass, which is not permitted. By publishing his research in the documents found on his website, the author wants to draw the attention to these errors and hopes that these errors will be removed from the foundation of Science.

In theory, physicists and astrophysicists, in some cases, measure different things than what they are actually observing. With the **LIGO** equipment, no 'gravitational waves' have been measured because gravity moves with infinite velocity ($v \gg c$) and it does not have any wave and particle character. **LIGO** only measured the shock waves of the *gravitational energy* emanating from the collision of billions of years ago. These are indeed real waves moving through matter and therefore limited by the speed of light!

Several experiments and observations are associated with errors which has risen from the incorrect understanding of the phenomenon of gravity (**E3 + E3-1**) and applying the formula $E = mc^2$ incorrectly (**G5**)

Visual observations and measurements of radiation from the universe, must be re-interpreted because the small deflection of light and all other forms of radiation in the universe were not taking into account.

-) **The effects of the 5 -9 movements of the earth in the universe are not recognized:**

Measurement errors are made consistently because the fact that the earth is subject to 5 - 9 different speeds in the universe has been ignored. During the cycle of the universe virtually *all the physical and chemical forces and their related constants of nature change quantitatively*.

Only the constants related to mass, electric charge, and magnetic spin actually remain constant.

Currently (2016) there is still a discrepancy between the theory and experiments. Science attaches more importance to experiments to confirm the theory through modelling and measurements. Theory and experimentation must be balanced. They should be complementary and mutually confirmable. Science has to realize that the most elementary things are not always directly measurable.

Question 24 - conclusion:

- 1) It is time for science to critically screen and get rid of the inaccuracies which has become embedded in the foundation for the past few decades.

Question 25: How to avoid the pending and unrealizable big physics projects:

They cannot continue forever, growing in size, cost and time scale

-) **Answer:** It is time to go back to basics. Science should be stripped of a number of inaccuracies which have made their way inside the foundation in recent years. These inaccuracies are fully interwoven and are firmly anchored! By correcting the errors, physics will become clearer, easier, more structured and organized. This cleaning process will also result in an evaluation of all the measuring equipment used in scientific research. The correct interpretation of measured and obtained data deserves much attention.

The **LHC** is one of the greatest scientific experiments which mankind has realized up to know. The obtained and observed particles were measured in a state of 'high-energy'. However, all particles in matter that surrounds us, are in a state of 'low-energy' where 'high-energy' particles are hardly found.

In this respect, the **LHC** gives no new relevant information on the structure of the 'low-energy' mass / matter around us. See **Documents F1a 2014, Fib, F1c, F1d and F1e**. The matter which is all around us are not constructed from the 17 particles of the Standard Model, but build from only four *non- detectable* Higgs particles.

These four, two by two, 'low-energy' and super-symmetric Higgs particles in the *Standard Higgs Model* by **Uiterwijk Winkel (F1a 2014)** will not be found in the 'high-energetic' debris of the **LHC**!

-) **Question 25: Conclusions:**

- 1) Big costly projects, like the **LHC**, make no *direct contribution* to describing the mass and matter around us!
- 2) The 'high-energy' *Standard Model* has to be replaced by the 'low-energy' *Standard Higgs Model* of **Uiterwijk Winkel**.

***6) EXPECTATIONS:**

Document J2 describes more than 10 errors /inaccuracies which are currently (2106) present in the foundation of Science. The author also expects that his *qualitative* vision and documents will be denied by modern scientists.

They will probably continue on the same track. The problem is bypassed by constructing new myths that are only going to solve the problems temporarily. Consider the solution of Science for 'dark mass / matter' and the obscure 'dark energy'.

There is no form of 'dark matter' or 'dark energy' present in the universe. All mass / matter and energy can be explained, modelled and made clear through a quantitative model of the universe and the cycle of the universe.

The documents on www.uitewijkwinkel.eu based on the author's research and analyses, and in particular the documents to systematically derive all forces on the atom **E3, E3-1, F1d and F1e**, will sooner or later lead to severe and painful adjustments in the foundation of Science. The longer this surgery is delayed the greater the scientific and economic damages. It could lead to investments in research by using the wrong equipment and in the development of such equipment. Worse, however, are incorrect conclusions obtained from the measured results.

The removal of the, more than, 14 errors as explained and recommended in **Document J2**, is equal to the answering of the 25 questions raised by **Gross**. For that courage **Gross** deserves a lot of credit. By asking these 25 questions he made Science *aware of* a number of basic errors in the foundation of the Science.

Gross will probably not have realized the consequences of his questions and the effects of the answers on these questions. However, the author believes that Science itself has to take the initiative in cleaning their own foundation.

***7) CONCLUSIONS:**

- 1) As far as the author is aware, this **Document (J1)** is the first attempt by anyone, to answer all 25 questions raised by **Prof. Dr. David Gross**.
- 2) These 25 questions raised by **Gross** are due to a number of inaccuracies in the foundation of the Science. These inaccuracies are elaborated on in **Document J2**.
- 3) The inaccuracies / flaws / faults in the foundation of the Science result in incorrect interpretations of the measured data. These inaccuracies significantly block the further progress and development of Science.
- 4) The discussion around these errors and removing them should be done as soon as possible.
- 5) Scientific Institutions, Universities and the Societies of Science should take the lead in this painful process.
- 6) The current generation of Scientists will object to all efforts to clear the foundation of these errors. The errors will most likely continue for at least a few more decades before something is done and changes happen.
- 7) In the meantime, everything will remain exactly as it is, in the year 2016.

8) EPILOGUE:

The author's attempts on making the world of Science aware that the foundation of Science needs to be cleared of the errors, is the result of his research that links the forces on the atoms with the velocity of these atoms (earth) in the universe. This is a completely new point of view regarding the origin of forces and bonds in nature.

This view will result in large changes in the foundation of Science. It will also lead to a revision of the existing and officially published work in scientific papers. Scientists have worked on these papers with great care and effort for years. It will therefore be a slow and painful process,

The author would like to express his gratitude to **Franklin Roos** for his useful comments.

Mr. **A.P.B. Uiterwijk Winkel** MSc. *

* Copyright; See **Document A6**.