G1: Matter.black-hole.matter.Krizgag.apb.uiterwijkwinkel.November2010.Eng.Paul
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ORDINARY MATTER, BLACK-HOLE MATTER, KRIZGAG:

■ **In the universe, ordinary matter and black-hole matter is present only in the form of ordinary atoms and in the form of black-hole atoms. Both types consist exclusively of ordinary protons and ordinary electrons. In this document, an explanation is given for why the atomic nucleus cannot contain neutrons:**

■ **Protons and electrons consist of about 60% elementary particles ordinary matter and 40% equivalent particles antimatter. These particles are, at all levels of matter formation, arranged in rhombus-shaped constructs. The rhombus shape ensures very stable constructs and prevents internal annihilation of the proton and electron. See the figures of document F1. The universe contains no anti-protons or anti-electrons, nor does it contain anti-atoms:**

■ **All ordinary atoms conform to the Periodical System of Elements, starting at the hydrogen atom (H):**

■ **Black-hole atoms are formed under extreme pressures by way of an *internal* collapse of ordinary atoms, when Van Der Waal's bonds are formed between electron pairs in the electron shells of an ordinary atom. When this happens, the electron shells collapse to orbits directly surrounding the atomic nucleus. The orbital velocity of electron pairs increases to close to the speed of light. This increase in velocity causes the electron pair to separate into loose electron. The Van Der Waal's force/bond disappears:**

■ **In order to transition to a black-hole state, an ordinary atom must possess at least two electron pairs. The collapse into a black-hole state can only occur from the element beryllium (Be) onwards. All black-hole atoms also conform to the Periodical System of Black-Hole Elements starting at the black-hole element beryllium:**

■ **Elements H, He and Li possess one electron pair or less and therefore cannot be transformed into black-hole atoms. The ordinary elements H, He and Li can therefore not be incorporated into a black hole and stay bound to the edge because of gravitation:**

■ **Within black-hole atoms, the atomic nucleus is tightly contained within its electron shells. The black-hole atomic nucleus' ability to vibrate is therefore very limited. As a consequence, the temperature of black-hole atoms and black holes resides *near* absolute zero (0 degrees Kelvin)! This is why a black hole cannot emit light! Black holes can however emit infrared, gravitation and particles of matter.**

■ **Inside black holes, black-hole atoms repulse each other through their negatively charged electron shells. Disintegration is only prevented by a black hole's gravitation, which keeps black-hole atoms together. All types of black holes reside in this unstable state.**

■ **To endure, black holes and other compact celestial bodies must generate a certain minimum of gravitation. The author defines this minimum amount of gravitation as the Critical black hole gravitation or Cribhog (Krizgag in Dutch). Krizgag is equivalent to the gravitation, velocity/kinetic energy of the smallest know black hole or similarly compact celestial body in the universe:**

■ **A black hole/white dwarf/neutron star that falls below Krizgag will disintegrate into loose black-hole atoms. These loose black-hole atoms are in themselves unstable and will explosively disintegrate into an equivalent number of protons and electrons. This is what occurs during the Little Bang:**

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1) Frank Roos for his remarks,
2) Adarshi Yadava for the graphical realization of the figures in document G8.

*** 1) ORDINARY MATTER CONSISTS SOLELY OF CONSTRUCTS OF PROTONS AND ELECTRONS;**

-) The Little Bang results in the release of an equivalent number of protons and electrons:
This universe originates from a gigantic black hole with a radius of approximately 0.1 billion Km which formed at the center C of the universe and contained all the matter of the universe. The Little Bang occurs when velocity and therefore gravitation disappear, causing this Little Bang black hole to fall below the *Critical black-hole gravitation* or *Krizgag* and becoming unstable.

When the Little Bang occurred, the Little Bang black hole first disintegrated into loose, unstable black-hole atoms which, in four consecutive steps, disintegrated further into an equal number of ordinary protons and ordinary electrons. These protons then arrange themselves into alternating mono-sphere layers of protons and electrons, expanding uniformly with a speed of ca. 100 Mm/s or 1/3rd of the speed of light. For details on the Little Bang, see document G6 and G7 with the accompanying **figures 19 – 30** in G8.

-) The proton and electron possess only their own *elementary* charge-force and magnetic spin-force:
An equal number of ordinary protons and electrons are released when the Little Bang occurs. Despite the differences in size and mass, the proton and electron have equal but opposite elementary electric charge(-force), making the universe as a whole charge neutral. Both particles also exhibit the same magnetic spin(-force).
The proton and electron attract each other through charge-force and repulse each other through their equal elementary magnetic spin-force. As individual particles, protons and electron exhibit no other form of physical or chemical force, including gravitation!

During the Little Bang, protons and electrons arrange themselves in monosphere layers of proton alternated with monosphere layers of electrons. Within these layers, a strong repulsive force through both charge and magnetic spin is present. This results in an expansion of these monosphere layers of protons/electrons, ultimately reaching ca. 1/3rd of the speed of light; **figure 30** of G8.

-) The proton and electron cannot disintegrate during the Little Bang:
These protons and electrons cannot disintegrate into their elementary particles during the Little Bang. Should that happen, it will be impossible to reform a proton/electron from the fragments later on in the cycle of the universe. Nor could atoms be made. Matter in the universe could not form atoms/molecules.
During the Little Bang, the structure of the proton and of the electron must remain intact.

-) Three-dimensional structure of the proton/electron:
In document F1 on www.uiterwijkwinkel.eu, the author describes the *three-dimensional structure* of the stable proton/antiproton and that of the electron/anti-electron. For these see **figures 15a – d** in document F1 or the same **figures 18a – d** with accompanying notes in document G8.

In **figure 15a or 18a** it is revealed that the proton consists of *five proton quarks; four ordinary proton quarks* and *one anti-proton quark* which together form a *highly stable rhombus shape*. The structure of such a stable proton is however only possible when, at all lower levels of matter formation, a rhombus-shaped construct of 4 parts matter + 1 part antimatter is present! Only when this rhombus-shaped structure is applied consistently throughout all levels of matter formation can internal annihilation of the matter and antimatter present within the proton be prevented! *)

Similar rhombus-shaped arrangements of 5 equivalent particles of matter/antimatter apply to the structure of the anti-proton, the electron and the anti-electron. Only in fixed matter/antimatter proportions of 4 : 1 or 1 : 4, arranged in a rhombus shape, can stable constructs of matter/antimatter be achieved! This coexistence of matter/antimatter is contrary to all expectations! See also document F1; **figures 1 – 15**.

In **figures 18a – d** of document G8 it is revealed that bonds within the rhombus shape of the proton/electron always consist of:
-) an attraction through charge combined with a repulsion through magnetic spin (a charge ↔ mag bond) or
-) the opposite; an attraction through magnetic spin combined with a repulsion through charge (a mag ↔ charge bond).

Bonds are formed always as combinations of an attracting force and a repulsing force. The main advantage of this type of bond is that bound particles are prevented from making physical contact! This is how the rhombus shape allows particles of matter and particles of antimatter to be in such close proximity without annihilating!

-) Proton/electrons consist of fixed proportions matter/antimatter:
In document F1 the author deduces that both the proton and the electron consist of ca. 60% elementary particles of ordinary matter (rotary photons) and ca. 40% anti-rotary photons. When considering the anti-proton/electron, these proportions are inverted. All antimatter in the universe is safely locked away inside ordinary matter because of the abovementioned rhombus shapes, internal annihilation is prevented!

*) In the case of particle accelerators such as the Large Hadron Collider or LHC, prevention of annihilation is far from guaranteed! On the contrary; high speed collisions between protons causes them to disintegrate into five quarks; four regular quarks and one anti-quark. See **figure 15a** or **18a.**
When released, this one anti-proton quark immediately annihilates with one of the four released ordinary proton quarks, completely converting both quarks into infrared photons! Both the anti-proton quark and the ordinary proton quark, originally present in the proton, have vanished before detection!

This *anti-proton quark* is situated at the center of the proton and is very difficult or impossible to detect using particle accelerators because of the inevitable annihilation that occurs. Annihilation is a problem using this research method.

-) Protons and electrons are the only stable building blocks of matter in the universe:
Because of the prevalence of the rhombus shape throughout all levels of matter formation, the proton and electron consist of highly stable particles. See **figures 1 – 15** of document F1. This universe is based completely on the ordinary proton and an equal number of ordinary electrons. All other constructs of elementary particles are unstable and will disintegrate.

The ordinary proton/electron possess *but two elementary forces*: a) electric charge and b) magnetic spin. The same applies to the elementary particles that form the proton and the electron. (Gravitation is not produced by the proton/electron itself nor by its constituent elementary particles)

-) Protons and electrons together form the hydrogen atom and gravitation comes into being:
During the Little Bang, sphere layers of loose protons and loose electrons are propelled outwards at ca. $1/3^{rd}$ of the speed of light. From these, billions of years later, the hydrogen atom/molecule is formed. At this point, the expanding universe consists of a shell of 100% pure hydrogen. In order to form a hydrogen atom, the proton and electron need to be at an appropriate distance from each other and the electron needs to have the appropriate velocity relative to the velocity of the proton. The formation of the hydrogen atom is a complex matter.
With the formation of the hydrogen atom, gravitation returns to the universe. Gravitation (as other forces) is generated by the "shell" electrons of the atom only, in combination with velocity of the atom through the universe. The onset of gravitation immediately slows the expansion of the universe. This deceleration is currently still underway. For the origins of gravitation see document E3.
At the moment of formation of the first hydrogen atom/molecule, the universe has already achieved the main part of its total expansion. See also step 6 of the cycle of the universe in G7.

-) Deceleration of expansion is concurrent with the onset of galaxy rotation:
Gravitation slows down the expansion of the universe and the hydrogen shell. The energy released with this deceleration is converted into rotational velocity/energy. Many tens of billions of rotations and points of rotation R1 appear within this hydrogen gas; see **figures 37 – 40** of G8. Over time, hydrogen accumulates at ca. 150 ± 50 billion points of rotation R1, resulting in the formation of ever larger and hotter balls of hydrogen; **figures 42 -47** of G8.

Billions of years after the first formation of hydrogen, nuclear fusion starts spontaneously causing the, now undetectable, hydrogen supernovae. These hydrogen supernovae were much more powerful than the currently detectable and much smaller star supernovae; **figures 48 – 52** of G8.

These billions of pure-hydrogen supernovae also for the central black holes currently present at the center of each galaxy; **figures 49 – 50** of G8. Only ca. 15% of all hydrogen is consumed in the fusion reaction during these hydrogen supernovae. Most of the hydrogen is not consumed and is expelled from the area of fusion. Around the central black hole, formed by each hydrogen supernova, billions of years later one complete galaxy containing many billions of stars and their planets is formed. See G7 and **figures 50 – 60** of G8.

When these hydrogen supernovae occurred around 20 to 30 billion years ago, they caused an inconceivable amount of electromagnetic and particle radiation to be emitted. This radiation has however already been captured around one of the central black holes formed during the hydrogen supernovae. Around these central black holes, all radiation has subsequently been reformed into protons/electrons (see document F1) and after that into hydrogen atoms/molecules.
These hydrogen supernovae cannot be detected, not even with the best conceivable telescope. They have completely passed the universe's detection horizon. See **figures 42 – 50** of G8 for notes on these pure-hydrogen supernovae.

-) Only elements/isotopes of the Periodical System of Elements can be formed from the hydrogen molecule through nuclear fusion:

I) The atomic nucleus:
At the start of the nuclear fusion processes, only protons and electrons are presents as the building blocks of all atoms. During these nuclear fusion reactions, from these protons and electrons all other higher, both stable and unstable, elements are formed surpassing nr. 100 and all their possible isotopes. During the formation of these atoms *atomic nuclei without neutrons* are formed from protons and electrons.

-) No neutrons in the atomic nucleus:
The neutron consists of one proton bound to one electron. Suppose the presence of neutrons in the atomic nucleus (He and up). Because of the size difference between the proton/electron, every electron of the neutron must be bound to a second proton. Inside the atomic nucleus, this electron of the neutron is never bound to only one proton!
For this reason, *no neutrons* can occur as independent entities within the atomic nucleus! Therefore, atoms and their atomic nuclei consist exclusively of protons and electrons! See also box 1.

Inside the atomic nucleus, all bonds between protons and electrons consist of the mutual attraction through charge combined by the mutual repulsion through equal magnetic spin; a charge ↔ mag bond.

-) The same structure of atoms applies everywhere in the universe:
Across the universe, all atomic nuclei are structured in the exact same way and thus are all charge-neutral. For all atoms/elements on earth, the same approximate proportions of 11 *nuclear* electrons to 21 protons to 10 *shell* electrons. During the nuclear fusion process occurring in the hydrogen supernovae, across the universe atomic nuclei are formed that, because of the bond of two protons to one electron, possess a charge deficit. This is compensated for by having electrons in one or more orbits around the atomic nucleus, i.e. the K, L, M, N, O, P and Q shell.

-) Higher-element atomic nucleus structure through nuclear fusion of hydrogen plasma:
The nuclear fusion process starts from hydrogen plasma with the stepwise bonding of alternatively one electron and one proton to the atomic nucleus, after which one electron is added to the first electron shell; the K shell. After this moment, the order in which protons and electrons are added to the atomic nucleus and the electron shells occurs in such a way that the charge difference between nucleus and shells never exceed one unit of charge. This means the total charge of this atom under construction is always 1, 0 or +1.
From a spatial point of view, inside the atomic nucleus one proton can be bound to no more than 14 electrons and through these to 14 other protons. This situation is however never reached. A maximum stable size of atomic nuclei is in effect. All elements above number 92 (and some higher elements below this number) are inherently unstable. Of all stable elements up to nr. 92, one or more unstable or semi-stable isotopes are known.

-II) Electrons in orbits around the atomic nucleus:
Atoms are found in a charge-neutral state, or as ions. The atomic nucleus is always positively charged. Across the universe, this charge deficit acquired during the nuclear fusion processes is compensated for by taking up electrons in orbits around the atomic nucleus. These "shell" electrons have an orbital velocity of ca. 2,2 Mm/s.

Everywhere the same electron shells K, L, M, N, O, P and Q are found, with maximum electron capacities of 2 (K) , 8 (L), 18 (M), 18/32 (N), 18 (O), 10 (P) and 2 (Q). As with the structure of the atomic nucleus, a maximum number of electron shells and a maximum number of electrons per shell is in effect. Wherever possible, electrons in electron shells occur in electron pairs. *)

***) The electron pair:**
Electron pairs are constructs of two electrons bound to each other by a *chemically covalent radical bond* (rad). During the nuclear fusion process, the formation of this electron pair released bond energy in the form of heat! Apart from this purely chemical bond, a mutual physical repulsion through both equal electric charge and equal magnetic spin acts on both electrons. These repulsive forces prevent both *chemically* bound electrons from making physical contact. This prevents them from partial destruction.

The electron pair thus consists of a so called *(rad ↔ lad, mag) bond*. All physical and chemical bonds in the universe consist of such combination of one *bond* together with one or more *mutual repulsive force(s).* See document D1 for more information on bonds.

-) The stepwise filling of the electron shells of higher elements through nuclear fusion:
The outer electron shells of atoms are filled in a very structured manner. For energetic reasons, the K shell is filled first with two electrons forming one electron pair. The remaining electron shells are filled by the formation of (sub)layers containing one electron pair and sub layers containing 8 electrons arranged in a tetrahedron of 4 electron pairs; also lowest energy level. Starting at the Q shell these tetrahedrons are no longer possible.

During the nuclear fusion process, after the outer electron shell or subshell is filled with a tetrahedron of 4 electron pairs, as an intermediary step and on energetic grounds, the electron shells situated inwards are filled. When this filling of the inner shell is completed, a new outer electron shell or subshell containing one electron pair or a tetrahedron of four electron pairs is added. The number of tetrahedrons required to fill the inner shell differs; 1 tetrahedron for shell L and P, 2 for shell M and O and 2/4 for shell N.
The inwardly situated electron shells are filled in intermediary steps as much as possible. During nuclear fusion reaction, protons and electrons are added evenly to the atomic nucleus so the charge of the atom under construction is always either +1, 0 or -1.

By having one electron pair in the K shell and forming subshells containing either one electron pair or tetrahedrons of 4 electron pairs, the electron shell accomplishes:
1) optimum spatial distribution
2) energetically the lowest position of kinetic energy "added" for "shell" electrons. **)

**) All atoms in the universe are subject to (rotational) *velocities* each of which amount to many hundreds of km/s. This causes in atoms:
- a) a deflection in the orbits of *all "shell" electrons / electron pairs* around the atomic nucleus
- b) an amount of *kinetic energy to be added* to all "shell" electron and of course
- c) an amount of kinetic energy to be added to the atomic nucleus.

All "shell" electrons however strive for:
Ad a) an ideal circular orbit around the atomic nucleus without any deflection whatsoever. In response to this velocity and deflection of its orbit, all "shell" electrons/electron pairs generate *gravitation radiation.* Gravitation's primary purpose is to reduce the velocity of the atom in the universe and thus reducing the deflection of "shell" electrons from their ideal orbit.

Ad b1) reaching the lowest possible level of "added" kinetic energy. This occurs *within* the atom and the electron shells via:
1) the formation, where possible, of electron pairs which releases heat and
2) the arrangement of these electron pairs in subshells of 1 electron pair or 4 electron pairs arranged as a tetrahedron,

Ad b2) and *between atoms* through the formation of physical and chemical bonds, releasing bond energy in the form of heat. This is a sign that the level of "added" kinetic energy has been lowered and partly transformed into heat. This also causes the electron pair to gain a better orbit.

The velocity of an atom and the associated kinetic energy "added" to "shell" electrons causes the filling of electron shells with electron pair/tetrahedrons and the generation of gravitation and other physical and chemical bonds. See also document C2.

Ad c) The kinetic energy of the atomic nucleus is much greater than that of the electrons but less relevant in the context of this analysis.

-) Only atoms conforming to the Periodical System of Elements are possible starting with hydrogen plasma:
All atoms/elements on earth show electrons shells and subshells of one electron pair or tetrahedrons of 4 electron pairs. The electron shells around the atomic nucleus are arranged in the K, L, M, N, O, P and Q shells containing 2, 8, 18, 18/32, 18, 8 and 2 electrons or 1, 4, 9, 9/16, 9, 4 and 1 electron pair(s), respectively.

Because shell electrons strive to attain the lowest energetic level, the same pattern of filling electron shells with one (1) or four (4) electron pairs arranged in a tetrahedron is seen across the universe. This pattern is: 1 (K), 4 (L), 1 + 4 + 4 (M), 1 + 4 + 4 **) // 4 + 4 + 4 + 4 ***) (N), 1 + 4 +4 (O), 4 (P) and 1 (Q).
**) maximum capacity N shell up to element nr. 57 La (lanthanum);
***) maximum capacity N shell starting from element nr. 57 La (lanthanum).

The manner of filling the electron shells results in the *lowest possible level of "added" kinetic energy* for all electrons around the atomic nucleus combined. The arrangement of all atoms from the Periodical System of Elements is determined on an energetic basis.

Because of the enormous rate of expansion of the universe, all atoms and their isotopes across the galaxy are constructed in exactly the same way conforming to the Periodical System of Elements during the hydrogen supernovae. This implies a universal *unification of matter/atoms* conforming to the elements/isotopes of the Periodical System.

-) Stabilization of atoms into stable elements:
During these hydrogen supernovae, in principle stable atoms/isotopes can be formed up to and including nr. 92 (uranium). The higher elements and lower unstable atoms/isotopes acquire a stable state through:
a) *nuclear fission* by splitting a large atom into two smaller atoms,
and/or by emitting:
b) *fast electrons from electron shells* in the form of beta radiation,
c) *fast neutrons from the atomic nucleus* (emitting one proton and one "nuclear" electron simultaneously!) and
d) *alpha particles from the atomic nucleus* (emitting 4 protons + 2 "nuclear" electrons in the form of one helium nucleus).

All unstable elements/isotopes formed during these hydrogen supernovae revert back to one of the stable elements/isotopes of the Periodical System of Elements in the same way across the universe. Twenty to thirty billion years have passed since these hydrogen supernovae occurred. The stabilization process of unstable elements is an extremely long one and is still ongoing on earth. Unfortunately, these hydrogen supernovae cannot be detected, even with the best telescopes imaginable. This is elaborated upon below.

-) The formation of elements exceeding nr. 100 during hydrogen supernovae.
During hydrogen supernovae, the stepwise filling of electrons and the formation of atoms can continue into to the unstable elements between nr. 100 and 120. In the heart of the fusion region, enormous velocities are generated which result in the formation of electron pairs exhibiting extremely large Van Der Waals forces. These electron pairs form Van Der Waals bonds both *within* and *between* the electron shells. This causes the electron orbits of these newly formed higher elements to collapse onto the atomic nucleus, leaving the nucleus barely any room to vibrate. All atoms in a black-hole state and as such all black holes and other compact bodies such as white dwarfs and neutron stars are therefore extremely cold and reside near 0 degrees Kelvin!

The transition of an ordinary atom into a black-hole atom is described in chapter B of this document. See also **figure 9** of G8.

In all hydrogen supernovae, the newly formed stable and unstable ordinary atoms in the center of the supernova are instantaneously transformed into black-hole atoms. These are clustered together into one large central black hole where the black-hole atoms are contained. Such a central black hole is present at the center of all galaxies. See also step 16 of the cycle of the universe in document G7.

These, now undetectable, hydrogen supernovae happen extremely fast; the entire reaction takes place within one or a few seconds. They have been already preceded by 15 steps of the cycle of the universe. For these, see document G7.

-) The reformation of protons and electrons from electromagnetic- and particle radiation:
Huge amounts of electromagnetic radiation and many forms of particle radiation are emitted during these hydrogen supernovae. All these forms of radiation possess mass, charge and magnetic spin and have therefore been captured back into orbits around one of the tens of billions central black holes present in the universe. Around these black holes, all electromagnetic radiation and particle radiation is formed back into only protons and electrons which are then formed into the hydrogen atom.
This process where protons/electrons are formed from radiation is described at length in document F1 and depicted in **figures 1 - 15** of F1. (Such a vision on the formation process of mass/matter and of protons/electrons is completely missing in Relativity Theory!)

-) All radiation emitted by these hydrogen supernovae has since disappeared:
Because of the process of recapture of radiation and reformation into matter, hydrogen supernovae cannot be detected anymore. This is the reason that contemporary science lacks a plausible explanation for the genesis of the central black holes and the formation of galaxies around them. The author refers to steps 18 - 26 of the cycle of the universe in G7 and the accompanying **figures 42 - 50** in G8.

-) During nuclear fusion mass is not transformed into energy although a loss of gravity occurs:
The "shell" electrons, moving around the atomic nucleus at ca. 2,2 Mm/s are bound to the atomic nucleus during the nuclear fusion process. The "shell" electrons fusing with the atomic nucleus lose:
-1) the ability to generate *gravitation* (see document E3 on gravitation) while
-2) the *kinetic energy* of this electron is released in the form of photons of infrared and visible light.
These photons still possess their mass, charge and magnetic spin.

Because of the *loss of gravitation* and the simultaneous release of *apparently mass-less* photons, it has the false *appearance* that, during nuclear fusion, mass is transformed into energy. This is not the case!

During nuclear fusion *no mass* disappears, only *gravitation* and its accompanying gravitational energy!
Einstein's equation $E = mc^2$ for m = mass is sadly based on wrongly interpreted observations.

-) No direct relation between mass and gravitation; only an indirect one:
Mass and gravitation have no direct relation but an indirect one through:
a) the atom and the number of "shell" electrons and
b) the velocity of this atom and its "shell" electrons in the universe.

-) $E = mc^2$ applies only during annihilation and for m = matter:
The equation $E = mc^2$ only applies for m = matter and only during annihilation of a particle of matter with its equivalent particle of antimatter. During this annihilation, the light speed rotation of both particles is canceled and the matter/antimatter involved is completely transformed into matter-less photons! This annihilation releases an amount of energy equal to $E = mc^2$ although none of the mass, charge or magnetic spin present is transformed into energy!

Contrary to Einstein's and contemporary science's assumption, *mass, together with charge and magnetic spin are fundamentally immutable!* Mass cannot be transformed into energy! Sadly, Einstein (and with him contemporary science) failed to acknowledge the difference between mass and matter. See document G5.

-) Across the universe, the same system of forces applies:
During the hydrogen supernovae, for the first time the complete system of *stable* and *unstable* elements and their isotopes are formed, as is the system of forces that accompanies it. The system of physical and chemical forces we see present for the atoms/elements on earth is present across the galaxy in the same qualitative structure. These physical and chemical forces on the atom are generated by the different (rotational) velocities that every atom (and black-hole atom) is subject to in the universe. See document C2. These forces have in common that they can be used to form bonds which signify the reduction of the level of "added" kinetic energy by way of the release of heat. This however only applies to the outermost "shell" electron pairs when they are part of a physical or chemical bond.

The complete set of basic (velocity) forces and basic (kinetic energy) forces consist of 17 different fundamental forces acting on ordinary matter. (In reality only 16 as the gas force is equivalent to the Van Der Waals force). For black hole atoms, this set consists of 9 different fundamental forces. See documents C2 and C3 on website www.uiterwijkwinkel.eu.
In those documents, the author explains which forces act on both the ordinary and the black-hole atom, where these forces are located within the atom, and what causes the different physical and chemical forces to be generated.

From the hydrogen supernovae onwards, the complete set of basic forces acting on the atom is realized, and electron pairs appear in the electron shells of the atom. It is from this moment on that all physical phases of solid, liquid, gaseous and supercritical/plasma are possible.

-) Physical and chemical forces and their bonds consist of multiple (velocity) vectors:
In the case of physical and chemical forces acting on the atom, every form of (rotational) velocity generates a) its own deflection in the orbit and b) its own form of kinetic energy "added" to the "shell" electron/electron pair. As such, every form of (rotational) velocity generates its own *force vector* and, with it, its own *bond vector*! See also documents C5 and D1.

The number of relevant velocities of the earth in the universe and thus the number of relevant force- and bond vectors is somewhere between 6 and 9. The number of velocity vectors that constitute the physical and chemical forces is thought to be the same across the universe.
On earth, every physical and chemical force acting on the atom consists of the same number of force vectors. Every physical and chemical bond therefore consists of exactly the same number of bond vectors. The energetic proportions between these bond vectors are also the same.

-) Fundamental relationship of astronomy and quantum mechanics:
All physical and chemical forces and their bonds can be separated quantitatively into their constituent force and bond vectors. This can however only be achieved when astronomy succeeds in identifying and quantifying all (rotational) velocities of earth relative to the center C of the universe.
Then, the direct and indirect link between the (rotational) velocities in the universe and their effects on each atom/molecule residing therein is made clear. It is then that all fundamental questions of quantum mechanics can be answered. Vice versa, it is possible in principle to derive the velocities of the earth in the universe from every physical and chemical bond!

B) BLACK-HOLE MATTER:

-) Black-hole matter is formed as a result of nuclear fusion:
In step 1 - 15 of the cycle of the universe, the inception of the, now no longer visible, hydrogen supernovas is described. After the formation of hydrogen and the condensation of hydrogen plasma/gas into liquid, giant balls of pure (at this stage liquid) hydrogen are created. As they grow larger, these balls of hydrogen generate more and more gravitation and gravitation energy; **figures 37 - 40** of G8.
During the growth of these balls of hydrogen, ever more kinetic energy is released which increases the temperature of these balls of pure hydrogen to ultimately tens of millions of degrees Kelvin. Gravitation keeps these plasma-state hydrogen balls together. At a certain point, nuclear fusion arises spontaneously and instantly the nuclear fusion process gets out of control.

-) Most of the hydrogen is not used for fusion during the hydrogen supernovas, instead it is expelled outwards:
Because of the heat generated during nuclear fusion, the core of the hydrogen supernovas becomes extremely overheated, which results in enormously high pressures and temperatures. During this hydrogen supernova, the outer shell of the hydrogen balls, containing ca. 85% of all present hydrogen is expelled outwards; **figure 51** of G8. This expelled hydrogen is not used for fusion at this time. That happens later in the stars of the galaxies which are yet to be formed.

-) Nuclear fusion at the core of these hydrogen supernovas:
In the nuclear fusion zone, reactions go much further than just the formation of helium. The nuclear fusion zone can be divided into two areas:
- a) the *outer fusion zone* where nuclear fusion does not go much beyond the elements/isotopes of Mn/Fe, and
- b) the *inner fusion zone* where nuclear fusion goes beyond Fe and even results in the formation of elements and isotopes of the Periodical System of Elements up to nr. 110 - 120 which as ordinary atoms are completely unstable. In this inner fusion zone, the core of the hydrogen supernovas, practically all elements of the Periodical System that are formed are ≥ iron (Fe). See **figures 50 and 51** of G8.

Chapter A described how, during nuclear fusion, all atoms/elements of the Periodical System of Elements can be formed from hydrogen. These elements have as a common characteristic that they possess at least one electron pair in their electron shells. This electron pair generates Van Der Waals force.

-) An atom with an electron pair in its electron shell generates Van Der Waals force:
All "shell" electron pairs of the atom generate Van Der Waals force provided this atom moves through the universe relative to the center C, or is subject to a rotational movement somewhere in this universe. In *ordinary atoms*, *all* electron pairs within the electron shells generate this Van Der Waals force, although these forces within and between the shells are too small to cause the formation of Van Der Waals bonds *within* the atom. This is why the ordinary atom is maintained.

The strength of the Van Der Waals force of "shell" electron pairs increases/decreases *exponentially* with the (rotational) velocity of the atom in the universe. At sufficiently high speeds these Van Der Waals forces of the electron pairs *within* the atom cause Van Der Waals bonds to form both *within* the electron shells of the atom and *between the different electron shells*.

When this occurs, the electron shells of the atom collapse completely towards the positively charged atomic nucleus. This causes the orbital velocity of the "shell" electrons to increase dramatically from ca. 2,2 Mm/s to nearly the speed of light *c*. Because of this increase in velocity, electron pairs disband into separate electrons. This causes the Van Der Waals force/bond to disappear; the collapse of the atom is irreversible however. See **figure 9** in document **G8**.

-) For an ordinary atom to collapse from within at least two electron pairs are required:
This collapse of ordinary atoms can only occur when the following conditions are met:
1) an atom has at least two electron pairs; starting at the element beryllium,
2) enormous (rotational) velocities of ca. 10 - 40 Mm/s generate a large Van Der Waals force, and

3) extremely high external pressures and temperatures are present.
Only in ordinary atoms ≥ beryllium can electron shells collapse to close to the atomic nucleus. Transformation from an ordinary atom into a black-hole atom causes the atom's volume to decrease by a factor of at least 10^{18}. Black-hole atoms have the same structure of electron shells as the ordinary atoms that they were formed from. It is however much smaller and the electron shells are filled with individual electrons orbiting the atomic nucleus at velocities close to the speed of light.

-) Nuclear fusion of hydrogen creates space and velocity:
The transformation of loose plasma-state hydrogen atoms into much more compact higher elements through nuclear fusion reduces the occupied space by a factor of 10 - 100. In this newly created space, gravitation and enormous pressure drive all *ordinary* higher elements, formed in the *inner fusion zone* of the supernova, to the core of the hydrogen supernova in an extremely short time span.

The rotational velocity of these fused plasma-state atoms increases dramatically, and with it the Van Der Waals force generated by its electron pairs, which actually increases *exponentially* with velocity.

-) Transition to black-hole state causes huge reduction of atomic volume:
On the way to the center of the fusion zone, (rotational) velocities reach a level at which Van Der Waals forces within the atom cause the formation of Van Der Waals bonds both between the electron pairs within one electron shell as between electron pairs in the different electron shells of the atom. The atoms, newly formed in and around the core of the supernova, collapse even further and transition into a black-hole state where these atoms are essentially "shriveled".
In the *inner fusion zone* or the core of the supernova, empty space is created when the volume of these black hole atoms decreases by a factor of 10^{18}, creating a situation comparable to a vacuum. This collapsing of ordinary atoms into black-hole atoms occurs in all hydrogen supernovas and mainly in the core of the supernova.

The prevalent tremendous pressure drives all black-hole atoms to the center of the hydrogen supernova at extremely high speeds, creating one large central black hole. The intensely high pressure from without prevents these *utterly unstable* black-hole atoms from disintegrating into protons and electrons. At the core of the supernova, a highly compact central black hole is formed with a radius of about 20 - 30 Mm and a rotational velocity of ca. 70 - 80 Mm/s.

-) At the moment of formation of the central black hole, an enormous shockwave blasts the outer fusion zone away:
The nuclear fusion process occurs at tens of millions of degrees Kelvin. The atomic nuclei of black-hole atoms are completely encapsulated within their electron shells and as such have practically no room to vibrate. Al black-hole atoms therefore are at a state *close to* 0 degrees Kelvin and probably 2,7 degrees Kelvin; the background temperature of the universe!
Apart from the nuclear fusion process, the transition from ordinary atoms to black-hole atoms causes an enormous amount of energy to be released when ordinary, plasma-state atoms transition into super cold black-hole atoms.

Black holes cannot absorb this release of radiation and energy. Black holes form perfect mirrors and reflect 100% of this energy/radiation. This energy reflected off the black hole generates an enormous shockwave, blasting the *outer fusion zone* and *as yet un-fused hydrogen* (only approx. 15% has been used for fusion at this point) away from the central black hole; **figure 51** of G8.
In this *outer fusion zone*, nuclear fusion did not reach much further than the element iron. As such, this zone contains mainly elements up to nr. 56 iron and relatively small amounts of higher elements formed in the transition area between inner- and outer fusion zones. These higher elements escape the transformation into black-hole atoms and assimilation in the central black hole by way of this shockwave; see **figures 49 and 50** of G8.

In all hydrogen supernovas, this shockwave completely expels this *outer fusion zone*, together with 85% of the hydrogen plasma which has not yet been used for nuclear fusion. See also **figure 50 of G8**.

From this fused material, mainly ≤ Fe and hydrogen plasma, later solar systems and their planets are formed in completely predictable fashion. For this, see steps 18 - 26 of the cycle of the universe and **figures 51 -60** of G8.

The kinetic energy released during these supernovas is partly transformed into rotational velocity of the black hole, increasing the rotational velocity of the black hole to ca. 200 Mm/s or 2/3rd of the speed of light.

-) For an atom to collapse, two electron pairs must be present; only atoms ≥ Be can be transformed into black-hole matter/atoms:
For an atom to collapse from within, it must possess at least two electron pairs. Ordinary atoms from beryllium (Be) onwards can collapse in the presence of extremely high external pressure, velocity and temperature. Only elements ≥ beryllium can be transformed into black-hole atoms. The prerequisites of high rotational velocity, large Van Der Waals force and high pressure and temperature are easily met during a hydrogen supernova.

-) During the collapse, the electron pair disbands:
During the collapse of the electron shells, the velocity of the "shell" electron pairs increases from ca. 2,2 Mm/s to close to the speed of light, causing the electron pairs, recently formed during nuclear fusion, to disband into loose electrons on their way to their new orbit close to the atomic nucleus. The Van Der Waals force/bond associated with this electron pair also disappears. Due to the energetic irreversibility of the atom's collapse, the original electron shells cannot be reestablished.

-) The atoms H, He and Li cannot be transformed into black-hole atoms:
The elements H, He, Li and the hydrogen molecule possess *no or only one* electron pair and therefore cannot be transformed into black-hole atoms no matter how high the pressure! These three elements cannot in principle be assimilated into a black hole!
Around all black hole and comparable compact celestial bodies such as white dwarves and neutron stars a layer of hydrogen, helium and lithium (sometimes engaging in fusion) collects which rotates with the black hole and masks its presence. Central black holes and other compact celestial bodies exist close to 0 degrees, send out no light and are therefore very hard to trace and measure.

At and close to the central black holes, present at the center of all galaxies, always large quantities of hot hydrogen gas can be found in which fusion takes place. This cloud of fusing gas completely masks these super cold black holes from direct observation. In the layer containing very hot fusing H, He and Li plasma, these three elements are transformed into beryllium and onwards through nuclear fusion. Then they can be assimilated into the black hole.
This extremely hot, fast-rotating area of nuclear fusion masks the fast-rotating and super cold central black hole. These central black holes and similar smaller black holes therefore appear much like superheavy fast-rotating stars.

-) The origin of cosmic radiation:
All elements formed in the inner fusion zone and in the *core* of the supernova are turned into one superheavy central black hole consisting mostly of collapsed, black-hole state atoms starting at nr. 56 up to possibly nr. 110 - 120. This central black hole is for an important part filled with completely unstable black-hole atoms which are packed tightly and thus prevented from engaging in nuclear reactions.
These unstable black-hole atoms can only decay and stabilize when they are situated in the *very outer atomic layers* of the black hole. Only there is stabilization of unstable atoms possible. This radioactive decay results in the high-energy cosmic radiation in the universe. This radioactive decay also causes convective currents within the black hole!

-) Stabilization of black holes takes a lot of time:
The complete stabilization of all central black holes and the reformation of electromagnetic, particle and cosmic radiation into only protons/electrons takes a great deal of time. This is also the case for both the process of forming hydrogen from protons and electrons and the nuclear fusion process forming Be and onwards from hydrogen.
The entire stabilization and reformation process takes a lot of time although it must be completed before the time the universe attains its state of maximum expansion. The author estimates the time required for complete stabilization of the central black holes and complete rematerialization of all electromagnetic and particle radiation into protons/electrons (and eventually elements ≥ Be) to be approximately 200 - 300 billion years.

B1: PROPERTIES OF BLACK-HOLE ATOMS AND BLACK HOLES:

The collapse of ordinary atoms into black-hole atoms and the formation of a black hole have the following consequences for the properties of black-hole atoms and those of black holes:

a) The separation of electron pairs:
The increase in velocity causes electron pairs to disband into loose electrons. This causes the Van Der Waals force and bond to dissolve. The collapse of the ordinary atom into a black-hole atom is however irreversible.

b) Black-hole atoms are inherently unstable and can only endure inside a black hole:
In black-hole atoms and other similarly collapsed atoms, the "shell" electrons orbit the nucleus at speeds close to the speed of light. These loose "shell" electrons, because of their very high speeds, cause a huge centrifugal force which threatens to automatically disintegrate all black-hole atoms! All manner of collapsed atoms as found in black-holes, white dwarves or neutron stars are completely unstable on their own. Black-hole atoms can only endure inside a black hole provided the black hole generates enough gravitation.

c) The electric/magnetic tension between black-hole atoms makes also black holes unstable:
All black-hole atoms and similar compact atoms have a positively charged atomic nucleus surrounded by negatively charged electron shells filled with loose, negatively charged electrons moving around the nucleus with the speed of light. Black-hole atoms overall are charge-neutral.
From the outside, black-hole atoms exhibit a slight negative charge. Inside a black hole, the electron shells of these collapsed black-hole atoms are in extremely close proximity and repulse each other through *electric charge* and *magnetic spin*. Inside a black hole/compact celestial body, large electric/magnetic tension exists between all black-hole atoms; **figure 13** of G8.

d) The Critical black hole gravitation or Krizgag:
This tension between black-hole atoms would cause the black hole to disintegrate into free black-hole atoms. However, the gravitation generated by the black hole prevents this and keeps all black-hole atoms together inside the black hole.
In order to retain stability, the black hole must generate a certain minimum amount of gravitation. The author has named this amount *Critical black hole gravitation* or *Cribhog* (Krizgag in Dutch). Krizgag is equivalent to the smallest known black hole with a radius of 2 - 3 Km and a rotational velocity of ca. 100 Mm/s. Krizgag also means a minimum level of kinetic energy!

Inherently unstable, black-hole atoms can only endure inside a black hole/compact celestial body generating an amount of gravitation greater than Krizgag. See chapter C of this document.

e) Black-hole "shell" electrons are unable to change orbits and cannot emit light:
In black-hole atoms, electrons move close to the speed of light. Because of these speeds, the electrons cannot change orbits nor can they emit light or absorb energy from without.
The fact that black holes don't emit light has therefore *absolutely nothing* to do with the undoubtedly large (rotational) gravitation of black holes!

f) "Shell" electrons are also unable to absorb energy; black holes are perfect mirrors:
Because of their high velocities, "shell" electrons of black-hole atoms are also unable to absorb energy from the outside. A focused beam of electromagnetic or particle radiation aimed at a black hole is reflected 100%. Black-hole atoms and black holes are therefore perfect physical mirrors!

g) the atomic nucleus has very little room to vibrate and is at a state near 0 degrees Kelvin:
The black-hole atomic nucleus is completely trapped inside its electron shells. This almost completely prevents the black-hole atomic nucleus from vibrating. Black-hole atoms therefore have a temperature of *close to* 0 degrees Kelvin. The remaining vibration of the black-hole atomic nucleus is probably equivalent to a

temperature of 2,7 degrees Kelvin, the background temperature of the universe. Because they remain in this super cold state, black holes and comparable compact objects are unable to emit visible or infrared radiation.

h) The only forms of radiation that can be emitted by black holes are gravitation-, infrared- and particle radiation:
Because of the velocities of "shell" electrons, black-hole atoms are unable to emit electromagnetic radiation such as visible light! Black holes and such are able to emit nuclear radiation such as infrared but this does not happen because the black hole exists at a state *close to* 0 degrees Kelvin.

The "shell" electrons of black-hole atoms inside black holes are however capable of emitting gravitation because this is the only form of radiation lacking mass, charge and magnetic spin. This illustrates the special characteristics of gravitation. The author deduces the nature of gravitation in document E3.

Black holes also emit high-energy particles released during the decay of unstable black-hole atoms. This radioactive decay is only possible at the black hole's very outer atomic layer. For this reason the complete stabilization of black holes takes an extremely long time.

i) Gravitation is the only form of radiation that can be absorbed by black holes:
Black holes can only absorb gravitation because this is the only form of radiation lacking mass, charge and magnetic spin and kinetic energy. This is how black holes comply with Newton's law.

Black holes and comparable objects are unable to assimilate or absorb any form of electromagnetic- or particle radiation. Because of their very low temperature, black holes and comparable objects also cannot absorb infrared radiation.

j) Black holes may be hidden inside very large stars:
The center of superheavy stars may contain a black hole of a temperature *near* 0 degrees Kelvin. This certainly is the case for all central black holes of galaxies. In the nuclear fusion zone around this black hole, the elements H, He and Li up to Be are engaged in nuclear fusion until they can be transformed into black-hole atoms and assimilated into the black hole. This nuclear fusion zone completely hides the super cold large central black holes.

k) Forces acting on black-hole atoms:
Overall, black-hole atoms are charge-neutral. They contain the same number of electron shells as their ordinary precursor and these shells are filled with the same number of, now separate, electrons. In black-hole atoms, the electron pairs are missing. They therefore lack the forces associated with the electron pair. Black-hole atoms generate only the forces associated with the loose "shell" electrons and the atomic nucleus.

Basically, only gravitation, charge and magnetic spin are relevant with regards to black-hole atoms. See document C3 on www.uiterwijkwinkel.eu. Gravitation is emitted unhindered by all electrons of the black-hole atom. Because of the enormous rotational velocity, atomic nuclei of black-hole atoms and black holes emit electric and magnetic fields, as well as high energy cosmic radiation.

l) Black holes cannot distort space and time:
Einstein and contemporary science purport that a black hole's gravitation is so large that it distorts space and time around this black hole. Gravitation is however without mass, charge and magnetic spin and therefore cannot distort anything, certainly not time and space. The author asserts that black holes are very ordinary celestial bodies which, despite their enormous (rotational) gravitation, distort neither *universal clock time* nor *space* directly around them.
If this were the case, the cycle of the universe couldn't be completed as is. Any distortion in time or space would prevent all matter in the universe from converging at the center C of the universe at the same time to form the Little Bang black hole. This Little Bang black hole is needed for the Little Bang to occur, which signifies the end of the last cycle of the universe and the beginning of the new one. Distortion of time and space blocks and frustrates the completion of the cycle of the universe.

There is a relationship between velocity/kinetic energy, gravitation, time and space although this relationship is fundamentally different from Einstein's vision and that of contemporary science. This difference is elaborated upon in document G2 (time, space).
In document G5, the assumptions of general and special Relativity Theory are analyzed and expanded upon. Also in this document, the relationship between time, space and kinetic energy/gravitation is explained. Unfortunately, the assumptions of general and special Relativity Theory contain 4 - 5 errors.

m) Gravitation and the matter/mass of black holes:
Central black holes rotate around their axes extremely fast at ca. 200 Mm/s. Apart from that, groups of black holes at different levels rotate with different rotational velocities through the shell of the spherical universe. These 5 - 8 forms of rotation generate 5 - 8 forms of rotational gravitation apart from the expansion gravitation. These 6 -9 relevant gravitational vectors are generated by all "shell" electrons of the black-hole atoms.

Our solar system and planet Earth, together with the central black hole of the galaxy are subject to the same expansion velocity and therefore generate the same amount of *expansion gravitation.*

The formation of the central black hole caused an enormous increase in rotational velocity and an associated increase in rotational gravitation generated by this black hole. The central black hole generates proportionally much more gravitation than planet Earth.
From Earth, we experience but a fraction of this enormous rotational gravitation caused by the matter present in the central black hole. More matter (and with it mass and kinetic energy) is contained in all central black holes of the galaxies than we can detect from Earth and measure through gravitation measurements.

This rotational gravitation constitutes a significant part of the "dark" matter and "dark" energy. To get a precise picture, further modeling of the cycle of the universe is required.

n) Nuclear fusion causes a loss of gravitation:
The author asserts that gravitation is generated by "shell" electrons of atoms in combination with velocity of the atom through the universe. During the hydrogen supernovas, ca. 50% of all "shell" electrons are bound to the atomic nuclei through nuclear fusion. This causes 50% of all gravitation in the fusion zone to disappear, decreasing the total gravitation of the original ball of hydrogen gas and the potential/gravitational energy relative to C by the same amount. No mass is lost during this nuclear fusion!
(Nuclear fusion inside the sun causes the gravitation of this star to diminish, as occurs in other stars. Over time, the sun to Earth distance will increase!)

o) The Periodical System of black-hole elements:
All black-hole elements are derived from ordinary elements/atoms with two or more electron pairs ($\geq$ Be) of which the electron orbits have collapsed to close to the atomic nucleus. The original atomic nuclei endure, just like the number of electrons per shell/subshell. The only difference is that the electron pairs have disbanded into loose "shell" electrons rotating at speeds close to the speed of light in their orbits close to the atomic nucleus. The black-hole atom is very compact and hardly occupies any physical space.

Black-hole atoms are structured fundamentally the same as atoms/elements/isotopes of the Periodical System of ordinary matter. Black-hole atoms have a similar Periodical System of black-hole elements/isotopes, but this starts at the first black-hole element beryllium (Be).

B2: ANTIMATTER:
In document F1 it is deduced that *ordinary protons and electrons* consist of about 60% of elementary particles ordinary matter and ca. 40% elementary particles antimatter. At all levels of matter formation, these particles are ordered into highly stable structures through rhombus-shaped constructs. Anti-protons and -electrons have the exact opposite proportions of matter/antimatter.
Despite the fact that it is made up of up to 40% antimatter, the universe is completely free of both anti-electrons/protons and anti-atoms. For the characteristics of anti-atoms see document C4.

Anti-protons/electrons can however be made in particle accelerators. Possibly, the anti-hydrogen atom could be formed. The author asserts that particle accelerators cannot construe higher anti-elements.

Inside the Little Bang black hole, such particles of antimatter could not have been present as the black-hole matter/atoms, like ordinary atoms, are made up of ordinary protons and ordinary electrons. Any anti-protons/electrons would have instantly annihilated with ordinary protons/electrons and been completely converted into photons of light and heat.

C) KRIZGAG: Critical Black Hole Gravitation:
The "shell" electrons of ordinary atoms have a relatively small orbital velocity of 2,2 Mm/s, making the centrifugal force of these electrons also relatively small. Therefore, ordinary atoms/elements are *inherently* stable apart from possible unstable isotopes.

This is not the case with black-hole atoms. Here, the electrons' shells are situated directly around the atomic nucleus and they move at close to the speed of light *c*. In black-hole atoms, these "shell" electrons generate enormous amounts of centrifugal force which threatens to cause spontaneous disintegration of the black-hole atom. Black-hole atoms are inherently and completely unstable.
Black-hole atoms can only persist in an environment that prevents the disintegration of the black-hole atom. These conditions are only found inside black holes and comparable compact objects such as white dwarves and neutron stars. These objects rotate extremely fast and so generate enough gravitation through rotational gravitation, combined with other forms of rotational gravitation and expansion gravitation. See document C5.

-) Tension:
Inside a black hole or comparable compact object such as a white dwarf or neutron star, black-hole *atoms* repulse each other through their negatively charged outer electron shells and magnetic spin.
These black-hole atoms are in exceptionally close proximity from each other and this results in a large *electric/magnetic repulsion or tension* which threatens to cause the black hole, white dwarf or neutron star to disintegrate into loose black-hole atoms. This is prevented by (rotational) gravitation. All compact celestial bodies are therefore typified by an unstable and fragile equilibrium.

-) Gravitation must suppress the tension: Krizgag:
Only when enough gravitation is present can the repulsing black-hole state atoms be kept together. This gravitation is only present in black holes/white dwarves/neutron stars that rotate around their axes at great speeds.
To overcome this internal tension, the black hole, white dwarf or neutron star must generate a minimum level of gravitation! For the moment the author assumes that the same amount of gravitation is needed in all compact celestial bodies to retain stability.

The author has named this *minimum amount of gravitation* critical black hole gravitation (Krizgag). Individual black-hole atoms can only persist inside a black hole/white dwarf/neutron star when an amount of gravitation exceeding Krizgag is present to suppress and overcome internal tension!
Krizgag is equivalent to the *gravitation* of the smallest known and possible black hole, where this gravitation is generated by its own (rotational) velocity together with other rotational velocities and the velocity of expansion.

Linked to the (rotational) velocity and expansion velocity/gravitation of the black hole, white dwarf or neutron star is a minimum amount of kinetic energy. The smallest possible black hole/neutron star has a radius of approximately 2 - 3 Km which corresponds with a rotational velocity of ca. 100 Mm/s; **figure 12 G8**.

Therefore, for black holes Krizgag is a measure of:
a) the *minimum amount of (rotational) velocity/velocities and expansion velocity,*
b) the minimum required *amount of kinetic energy*, impulse + *momentum* linked to these velocities,
c) the minimum *amount of gravitation* required for stability of the black hole.
For a black hole, Krizgag results in: 1) minimum dimensions, 2) the minimum amount of matter required and 3) the minimum amount of kinetic energy/velocity required. Krizgag can undoubtedly be deduced theoretically.

Gravitation, kinetic energy, linear velocity/impulse and rotational velocity/momentum are as such *interconnected equivalent measures* of the black-hole atom determining the stability of black holes. *As of now* the author does

not distinguish between the sources of the required gravitation, be it linear movements/impulse or rotational movements/momentum.

-) When the universe stops expanding and starts contracting:
The expansion of the universe will not stop until:
1) all galaxies have been completely assimilated into the central black hole and
2) all electromagnetic- and particle radiation has been transformed, via protons/electrons, hydrogen and nuclear fusion, into elements > Be and then assimilated into this central black hole.

At the point of maximum expansion, all matter of the galaxy and all emitted forms of radiation (save gravitation) have been recaptured into the central black hole or, in the case of radiation, in one of the other central black holes. The expansion velocity/energy has then been converted into 5 - 8 forms of rotational velocity/kinetic energy.
The fast-rotating central black holes, which describe fairly random rotational movements, all return to the center C of the universe at the same time under the influence of rotational gravitation. On their ways to C, all central black holes are stripped of their own rotational velocity and other rotational velocities. This diminishes the central black hole's amount of gravitation energy relative to the center C of the universe. This gravitation energy is completely used in cancelling the rotational velocities of the central black holes.

-) No distortion of time and space:
This coordinated return at C of *all* central black holes is only possible of all matter in the universe works on the exact same universal clock time and the distortion of time and space, predicted by Relativity Theory, is completely impossible.
At the end of the contraction phase, all central black holes of the universe merge at the center C of the universe, forming one giant Little Bang black hole with a radius of ca. 0,1 billion Km. For the Little Bang to occur however, the gravitation generated by this black hole must fall below Krizgag!

-) Small tolerances for moving the center C of the universe:
For the Little Bang to occur however, the gravitation generated by this black hole must fall below Krizgag! The center C of the universe must be the same point in space with very small margins with regards to movement. The tolerances are very small and are likely to be just a few cm to a few meters!

To fall below Krizgag, the same amount of black-hole matter, mass, charge, magnetic spin and kinetic energy must approach C *from all sides, at the exact same time*, and C must be exactly at the center of the universe. It is evident that in order for this to occur, all central black holes must experience the same universal clock time and have equal distances to C; see **figures 1 - 14** of G8.
Only then do all central black holes arrive at C simultaneously to form the Little Bang black hole and is the velocity of black-hole atoms reduced to almost exactly zero Mm/s relative to C at the final phase.
Only then does gravitation fall below Krizgag and the Little Bang occurs, starting the next universe; **figure 14** of G8.

If the difference between C at the beginning of the cycle of the universe and C' at the end of the cycle is too large, this results in a movement of the Little Bang black hole containing all matter and kinetic energy in the universe. This net movement of C → C' will generate an amount of gravitation exceeding Krizgag. In this case, gravitation will not decrease enough for the Little Bang to take place.
In this case the universe ends as one large, almost motionless black hole with a radius of ca. 0,1 billion Km around C. This black hole moves very slowly relative to C, which generates an amount of gravitation exceeding Krizgag; **figure 15 of G8**.

-) Evidently, the Little Bang black hole's gravitation always falls below Krizgag:
This universe is part of a long string of universal cycles. Apparently, the Little Bang black hole's gravitation falls below Krizgag every time. The displacement of the center C clearly stays within the allowable margins of a few centimeters to a few meters. The universe has one fixed center, C.

Framework: THE AUTHOR REJECTS THE PRESENCE OF THE NEUTRON IN THE ATOMIC NUCLEUS:

-) The neutron cannot exist as a separate basic building block of the atomic nucleus:
The author asserts that the neutron can only come into being during stabilization of the atomic nucleus and then only at the outer edge of the atomic nucleus. The formation of the neutron occurs through the simultaneous emission from the atomic nucleus of one proton bound to one electron. This causes the false impression that the atomic nucleus contains neutrons as basic building blocks. This is not the case.

The neutron as a construct of one proton and one electron cannot occur inside the atomic nucleus. Inside the atomic nucleus, the electron of that neutron is always bound to two protons and never to just one proton. The neutron cannot therefore occur as a separate neutral particle or as a basic building block of the atomic nucleus! In all elements/isotopes, each "nuclear" electron is bound to no more and no less than two protons. These "nuclear" electrons function as "charge cement" between protons.

All atomic nuclei are essentially constructs of solely "nuclear" protons and "nuclear" electrons bound through a charge bond but prevented from making physical contact through equal magnetic spin (mag). Should the proton and electron make physical contact, extensive damage would occur to both the proton and the electron causing both to disintegrate into smaller debris.

The reciprocal repulsion between the proton and electron prevents any physical contact. All atomic nuclei except hydrogen are completely based on such *charge* ↔ *mag* bonds between protons and electrons.

-) Far-reaching simplification of the structure of the atomic nucleus:
The omission of the neutron reduces the number of different building blocks of the atom from 3 to 2 particles. This substantially simplifies the structure and image of the atomic nucleus and has significant implications for research into matter and elementary particles. See **document F3** with 3D figures.

-) The concepts of "strong nuclear force" and "weak nuclear force" are made explicit:
The concepts of "strong nuclear force" and "weak nuclear force" are now traded for concrete physical descriptions. The "strong nuclear force" is equivalent to the *electric charge bond* between the proton and the electron. The "weak nuclear force" is equivalent to the *magnetic repulsion* between the proton and the electron cause by their magnetic spin being equal.
The structure of protons and electrons inside the atomic nucleus is such that the proton and electron cannot make physical contact, despite their charge bond, because of their equal magnetic spin. Inside this bond, both particles remain completely separated.

-) In principle, neutrons only occur during the decay/stabilization of the atomic nucleus:
During the decay and stabilization of unstable atomic nuclei, neutrons are emitted by way of simultaneous emission of one proton and one electron. This neutron was not present inside the atomic nucleus as a separate particle! Neutrons only come into being at the outside of the atomic nucleus through the simultaneous emission of one proton and one electron!
The relationship between the emission of neutrons from the atomic nucleus and the assumption of neutrons in the structure of the atomic nucleus is therefore spurious.

Ir. A.P.B. Uiterwijk Winkel
11 November 2010

Dedicated to my aunt Annie Booy † 13/10/2010.