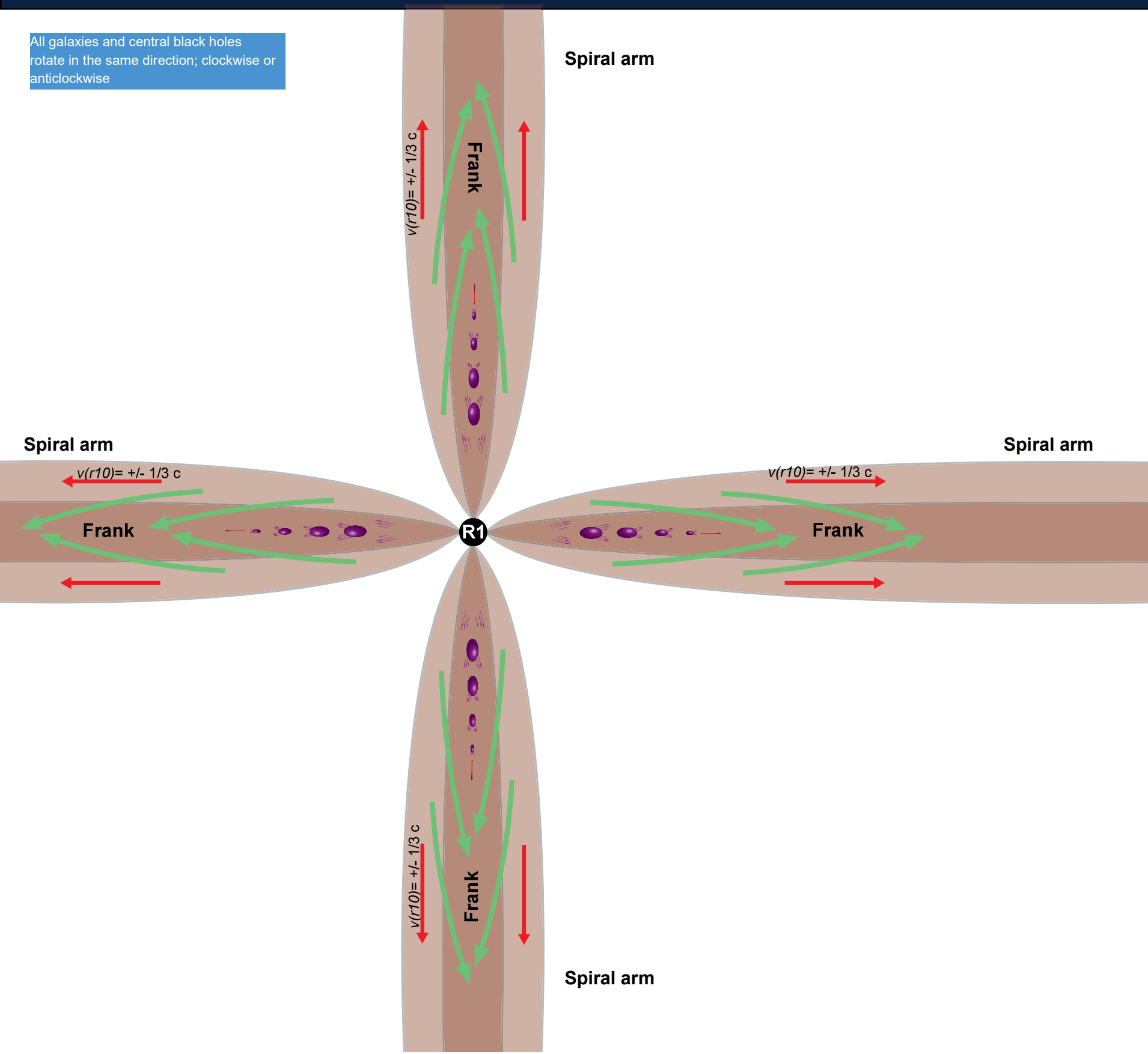


Figure 52 (S): The development of the spiral arms from the Roemers.

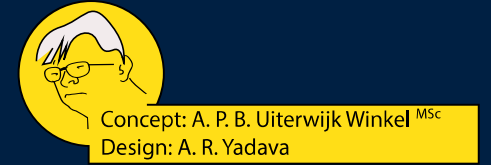
All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise



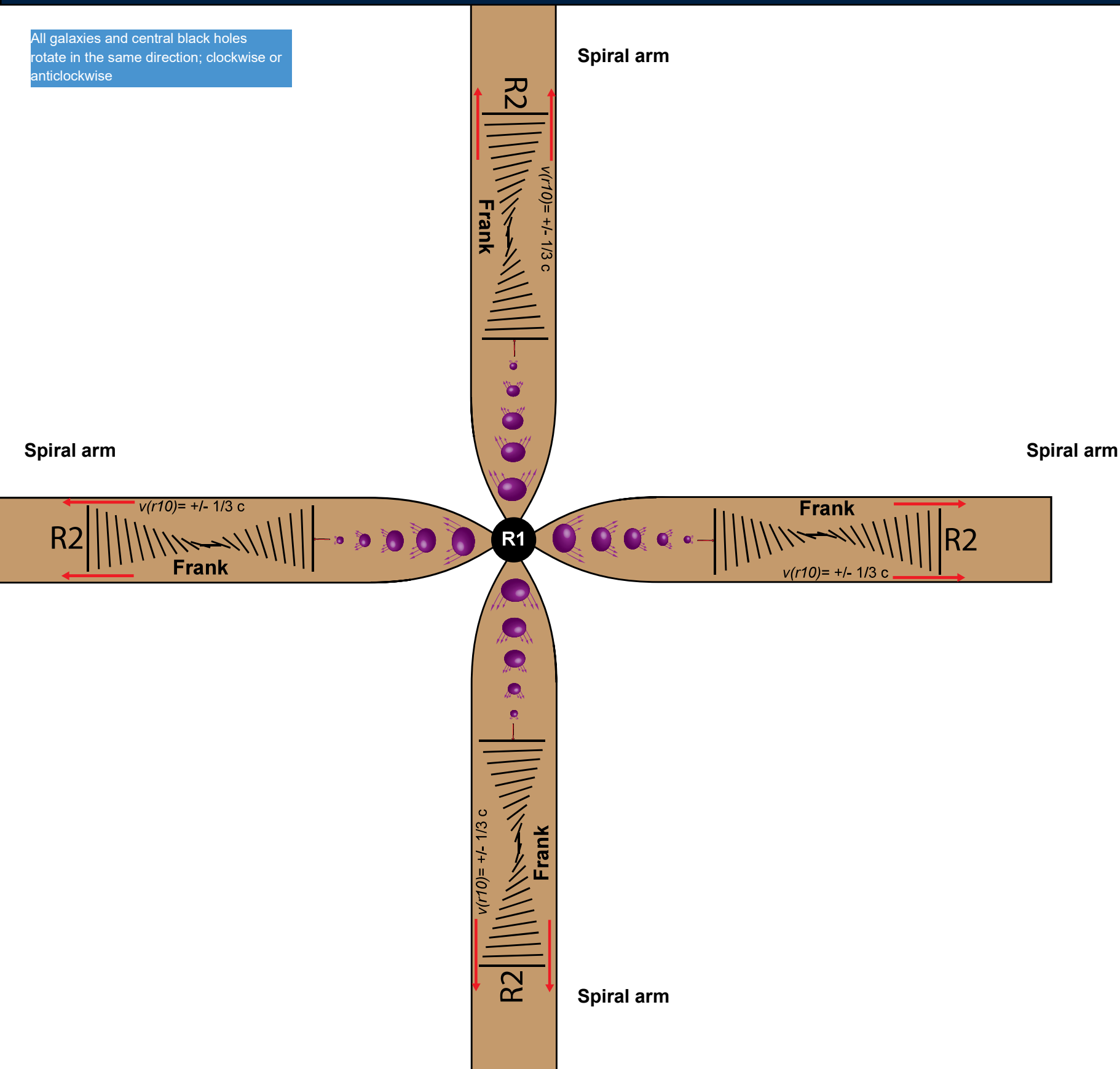
Explanation: **Phase 17 of the cycle of the universe**

- 1) The outer fusion region **R1 B** is emitted as spiral arms/ Franks from **R1** at a speed of $v(r10)$. The hydrogen plasma **R1 C** and the **Roemers R1 D** are emitted simultaneously. These Franks are the beginning of the spiral arms in the later galaxies.
- 2) At first each **Roemer** results in a spiral arm/ **Frank** and thereafter in a single spiral arm moving outwards from the central black hole (**R1**) at $v(r10)$ which is about $\frac{1}{3}$ rd of the speed of light.
- 3) The gravity of the **Roemer** ensures that all higher elements continue to deflect from the outer fusion area **R1 B** and from the hydrogen plasma **R1 C** into the path of these **Roemers** again. The higher elements stay together in the growing spiral arms or **Franks** . The length of these spiral arms become approximately 0.2 to 0.4 million light years.
- 4) A plasma mixture of hydrogen and higher elements to approximately number 92 of the periodic table. The start of the stabilization of the atoms and their isotopes through nuclear fusion, emitting alpha and beta particles, neutrons and gamma radiation.
- 5) Primarily hydrogen and helium plasma with gravity.
- 6) **R1** = central black hole **R1 A**.
- 7) Each proto-galaxy are subjected to 4 to 5 rotations within each facet area relative to **C** added to an ever decreasing expansion velocity.

Figure 53 (S): The outer fusion area are blown away, the depletion of the Roemers and their transformation into spiral arms of the galaxy.



All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise

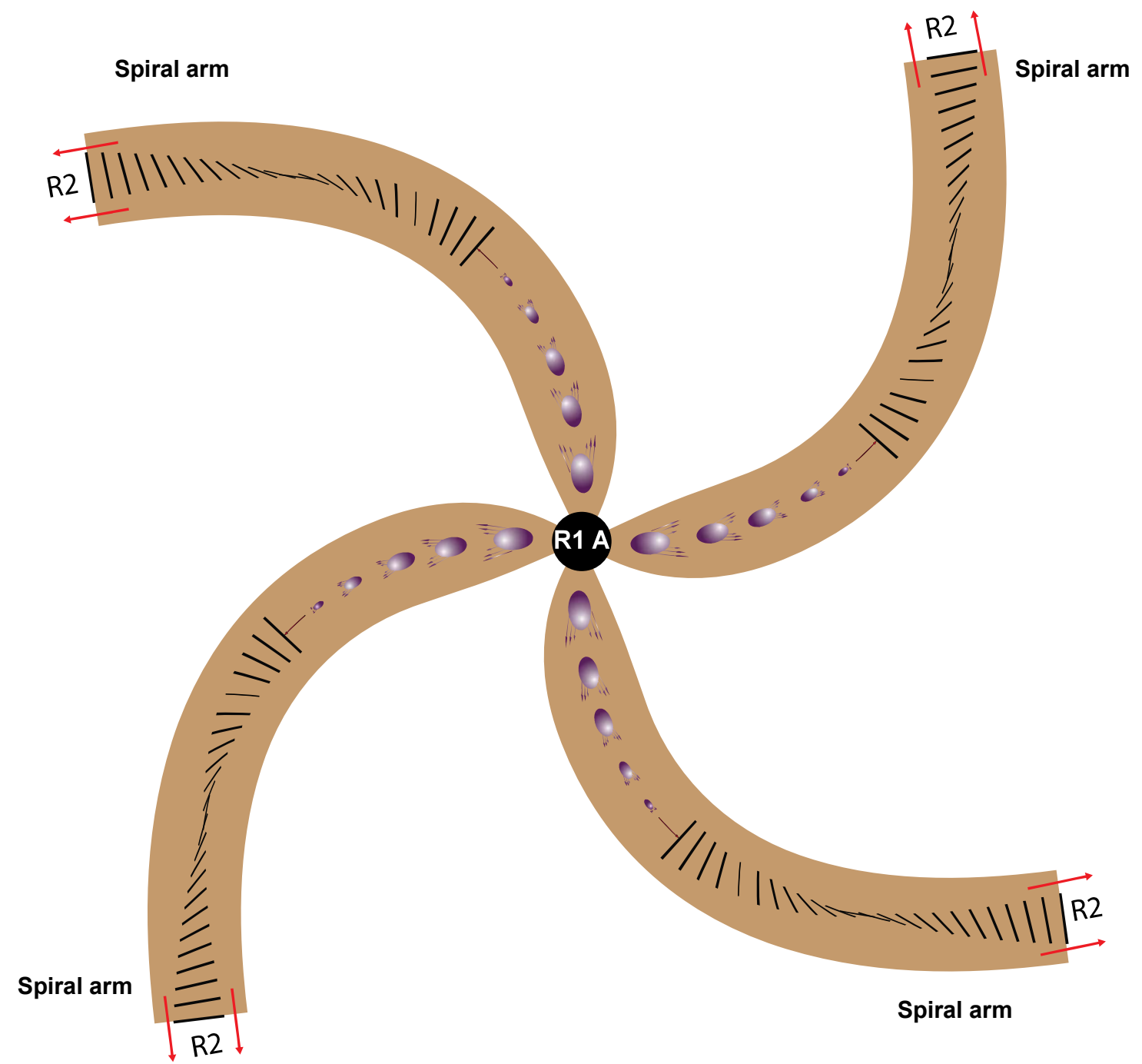


Explanation: **Phase 17 of the cycle of the universe**

- 1) The **Roemers R1 D** are fragmented. They vaporize and disappear at 80 to 100 Mm/s from **R1** and are overtaken by the large amount of energy, supernova debris **R1 B** and plasma which consist of a mix of hydrogen and helium that was released during the hydrogen supernova/ Big Bang at **R1 A**.
- 2) In a short period of time all **Roemers** are stripped on the outer side, and the hydrogen plasma is mixed with the higher elements from the outer fusion area **R1 B** and **R1 C**. See **Figure 50**.
- 3) The kinetic energy released during this process causes these spiral arms as a whole, to start revolving around their own axis **R2**. Because of the energy released inside the plasma region of the spiral arms/ Franks, it may form 100 to 150 billion points of rotation **R3** each of which each is the beginning of the formation of a star and a solar system.
- 4) Gravity pulls the plasma cloud in a circular band around the original orbit of the **Roemers** and later spiral arms.
- 5) Due to the inhibition by gravity around each pivot point **R1**, a total of around 100 to 150 billion points of rotation **R3** are formed. Later on each pivot point **R3** results in a solar system with one star, often a binary system with planets. A small part of the energy released is used to bring the spiral arms/ Franks into rotation **R2**.
- 6) At first the orbits of the spiral arms/ **Franks** are rectilinear; in time they curl very slowly. See **Figure 54** onwards.
- 7) A plasma mixture of hydrogen and higher elements, in particular element no. 56 iron and with a great number of higher elements. The start of the stabilization of unstable nuclei through nuclear fusion, emitting alpha and beta particles, neutrons and gamma radiation.
- 8) Each proto-galaxy is subjected to the 4 – 5 rotational movements within the facet area in the universe-spherical-shell relative to **C**.

Figure 54 (S): The start of the formation of the spiral arms and the way they curl.

All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise

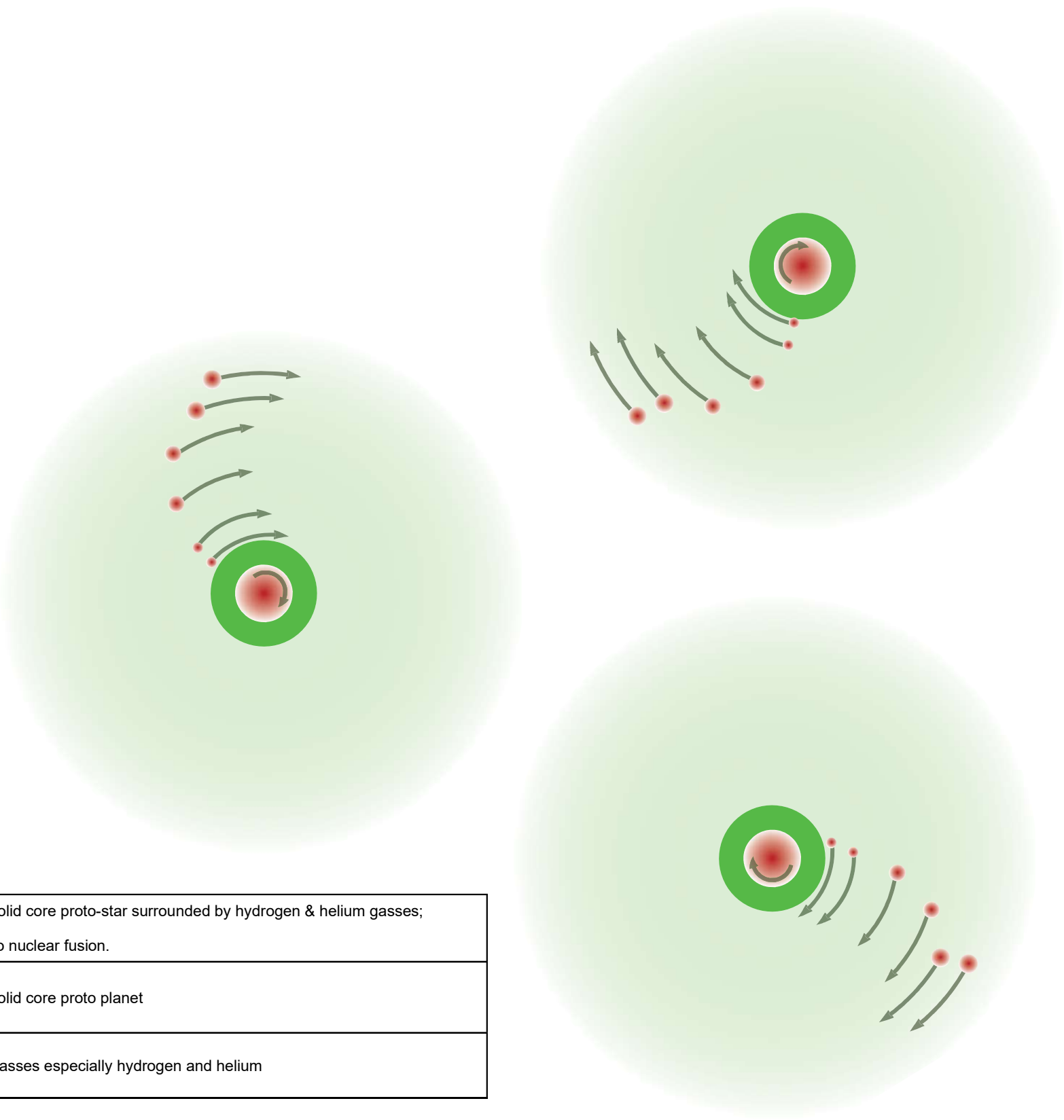
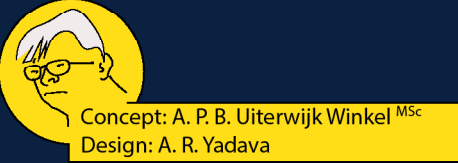


Explanation: Phase 17 of the cycle of the universe

- 1) The central black hole with a rotational speed of 150 to 200 Mm/s and a temperature of 2.7 K/ kelvin.
- 2) Due to the relatively slow rotation of the star system, still to be formed, the spiral arms curl slowly around the super massif central black hole **R1 A** of the galaxy.
- 3) Eventually, the expansion of the spiral arms extends to a length of about 0.4 million light years and these spiral arms are curled around **R1 A** and the central black hole due to gravity.
- 4) The curl is created partly due to the decrease in the expansion velocity of the whole universe-spherical-shell as a result of gravity and the conversion of the expansion energy into rotational energy of the galaxy. This process started about 20 – 25 billion years ago. That's why galaxies rotate much faster than thought on the basis of the current Big Bang theory where this process started 13,8 billion years ago.
- 5) At first, the spiral arms lie in a flat plane inside the universe-spherical-shell and move away from **R1 A** at a speed of 50 – 70 Mm/s
- 6) Each proto-galaxy is part of one of the 4 – 20 billion facet areas and in totally subjected to 4 to 5 rotational movements in the universe-spherical-shell relative to **C**
- 7) Within each Big Bang area or pre-galaxy, about 100 to 150 billion super large planet-like cores (**R3**) are formed consisting from elements higher than helium. Each core forms the core of a future star. Around each large core, a string of 1-10 much smaller centers develops which will later develop into planets and gas planets. See **figure 54 a**.

Figure 54a: Development through gravitation of the billions of nuclei of pro-stars and pro-planets.

Formation per proto-galaxy of 100 – 150 billion larger cores each becoming a proto-star surrounded by 1 – 10 smaller cores/ proto-planets.



	Solid core proto-star surrounded by hydrogen & helium gasses; no nuclear fusion.
	Solid core proto planet
	Gasses especially hydrogen and helium

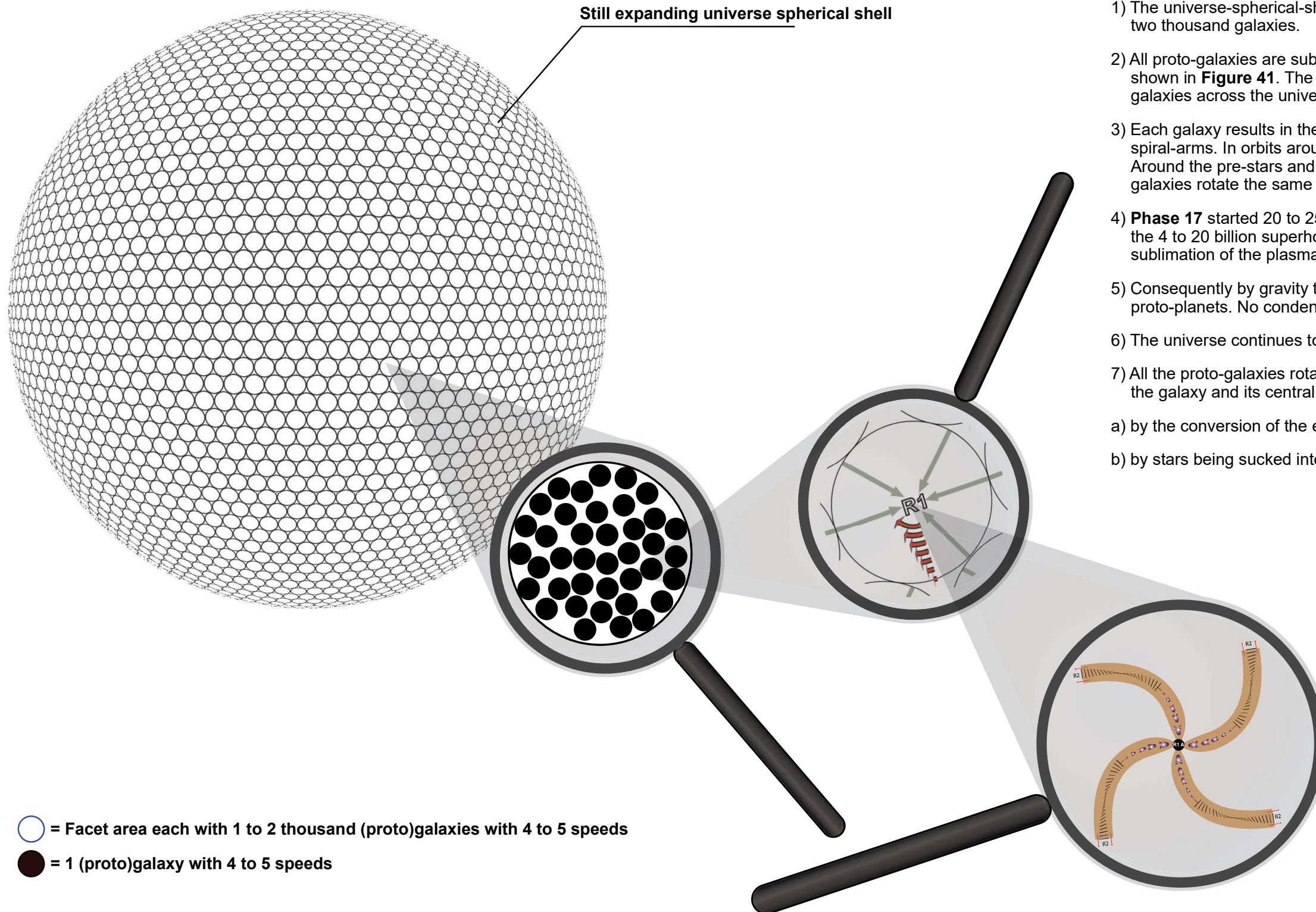
Step 17 Cycle of the universe:

- 1) After these galaxy **Big Bangs** retrieves gravitation the emitted heavier elements and gases back to the locally spiral arms in the flat universe shell. Outside the galaxies that shell is ultimately everywhere about 0.1 – 0.001 light year thick. The universe-spherical-shell is relatively thin in proportion to its size with a radius of 3 billion light years.
- 2) Within the mostly 2 may be 4 spiral arms caused by gravity about 100 – 150 billion (10^9) large accumulations of higher elements in the form of one or two large and heavy nuclei of the proto-star (s). Around those large cores rotate on ever-greater distances 1 – 10 much lighter nuclei of future proto-planets. These proto-planets generate less gravitation correspondingly.
- 3) After cooling around those large cores/ pre-stars and bigger proto planets accumulates flued condensate hydrogen gas, helium gas and other gases. Around each proto-star are similar **Kuiper belts** and of **Oort clouds** to be expected.
- 4) Through gravitational in these proto-nuclei of future stars and planets about 95 – 99% of the solid material accumulated from the area around this future proto-star with a radius of 1 – 3 light years. The smaller nuclei will grow into the later planets and gas planets of that star.
- 5) Around those heavy nuclei of the pro-star will also concentrate and accumulate about 98 – 99% of the gases. Only about 1 - 2% of the gas accumulates around this 1 – 10 small cores and proto-planets which results in gas-planets.
- 6) Within each proto-solar system the planets and the star itself all rotate in the same direction. The planets rotate overall with more or less the same speed around their star under construction.
- 7) These billions of proto-stars and their proto-planets all rotate in the same direction. Presumably all stars rotate with more or less the same speed around the central black hole **R1 A**.
- 8) The hot plasmas of hydrogen, helium and other gases in the spiral arms cool down. Sooner or later they cool down till the condensation point. Now no condensation of gases.
- 9) In this period starts the regenerating of electromagnetic radiation and particle radiation to protons/ electrons and finally to hydrogen. This also applies to the radiation from the periods of before these 4 – 20 billion **Big Bangs** took place. All photons stay inside the universe-spherical-shell. **Document G9**.
- 10) That regenerating of all electromagnetic radiation towards matter takes about 14 – 18 billion years to complete. All older radiation in the universe/the shell universe is finally gone! Our event horizon of the universe is restricted till 13,8 billion years! The present universe is already 40 – 45 billion years old.

Figure 55: The fairly even distribution of the galaxies

- under construction
- across the universe-spherical-shell.

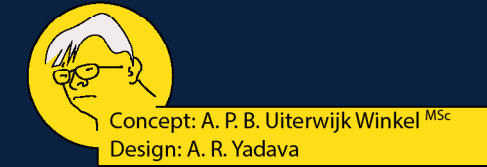
All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise



Explanation: **Phase 17 of the cycle of the universe:**

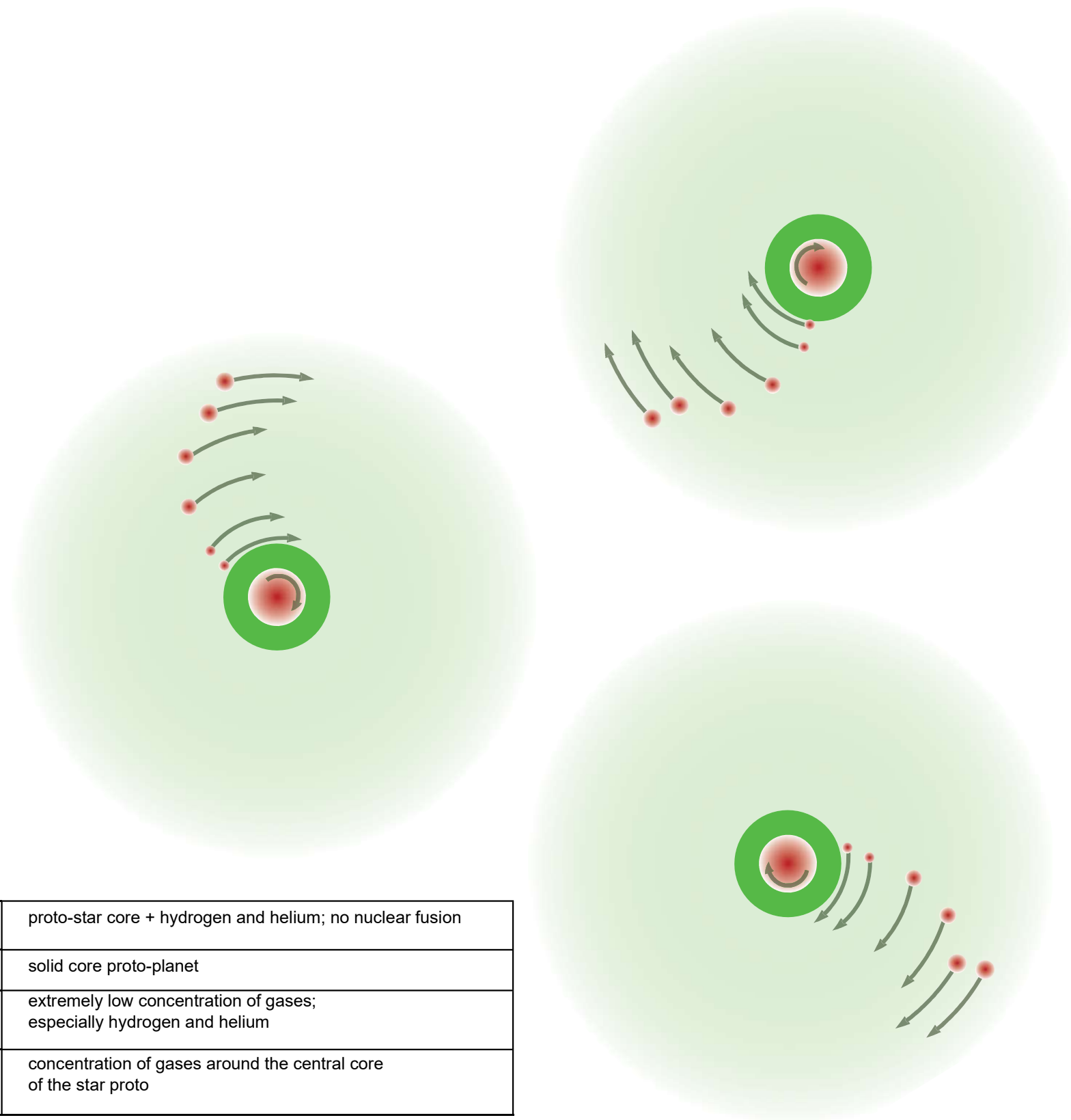
- 1) The universe-spherical-shell consist out of 4 – 20 million facet areas each filled with about one – two thousand galaxies.
- 2) All proto-galaxies are subjected to 4 - 5 rotations and rotational speeds of 10 - 100 km/s as shown in **Figure 41**. The final image will again result in a relatively uniform distribution of the galaxies across the universe-spherical-shell.
- 3) Each galaxy results in the formation of 100 to 150 billion large nuclei of proto-stars in their spiral-arms. In orbits around each proto-star approximately 1 to 10 smaller proto-planets. Around the pre-stars and bigger proto-planets hydrogen, helium and other gases are present. All galaxies rotate the same direction.
- 4) **Phase 17** started 20 to 25 billion years ago, and took 3 to 5 billion years to complete. After the 4 to 20 billion superhot Big Bangs the universe-spherical-shell cools and starts with the sublimation of the plasmas until pasty liquid minerals and solids.
- 5) Consequently by gravity this results in the formation of the nuclei of proto-stars and a string of proto-planets. No condensation of gases yet.
- 6) The universe continues to expand but the expansion rate is constantly slowed down by gravity.
- 7) All the proto-galaxies rotate around a central black hole. In time the angular/ rotational speed of the galaxy and its central black hole will increase:
 - a) by the conversion of the expansion energy into rotational energy and
 - b) by stars being sucked into the central black hole of the galaxy.

Figure 56: The formation of 100 to 150 billion bigger cores of proto-stars with around them 1 to 10 smaller proto-planets in each proto-galaxy.



Explanation: **Phase 18 of the cycle of the universe.**

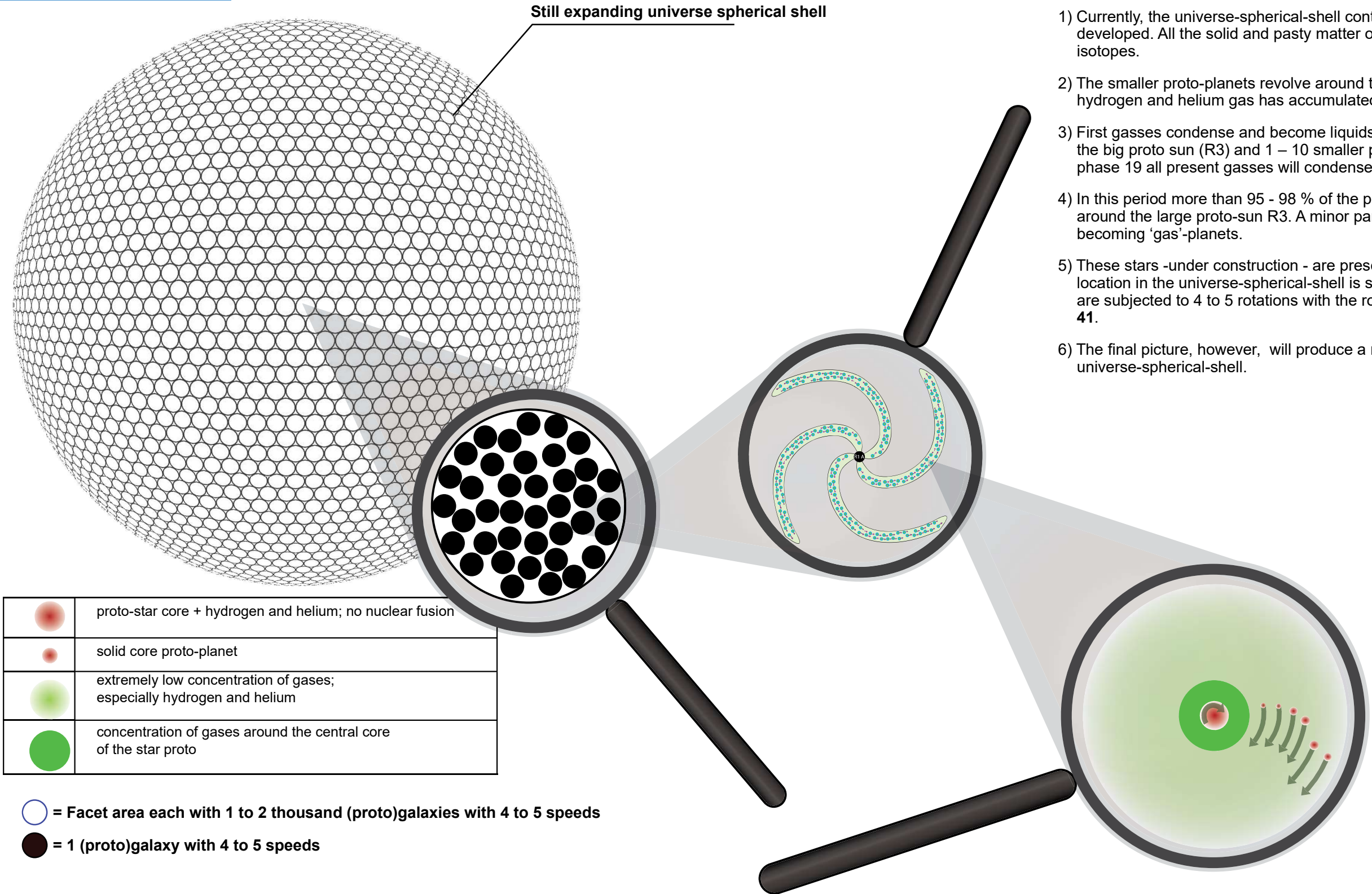
- 1) The majority of the different gases present accumulates around the cores of the proto-stars, especially hydrogen and helium gas. (Intense green color around central core.)
- 2) Duration 1 to 2 billion years. All plasma-like material transforms into viscous liquids and solids. No condensation of gases to Newtonian fluid.
- 3) The temperature of the present hydrogen, helium and other gases in the spiral arms cools down from thousands of kelvin to approximately 400 to 500 kelvin. It is here where the condensation of the different gases begins.
- 4) During the next phases, the temperature will continue to drop to a few kelvin. Eventually, also the hydrogen and in the end finally helium will condense.
- 5) In the proto-core of the future stars, 95% to 99% of the solid material of the solar system can be found in the vicinity of the star. The smaller accumulations in planets contain 1% to 5% of the matter present in the solar system.
- 6) Due to gravity, 95% - 99% of all gases concentrate around 100 to 150 billion proto-cores of future stars and only 1% to 5% around the string of 1 - 10 smaller proto-planetary-cores. Additionally, **Kuiper belts** and **Oort clouds** may be expected everywhere.
- 7) Within a *solar system* the star and all the planets rotate in the same direction and with the same overall speed.
- 8) Within a galaxy the stars and their planets also rotate in the same direction just like galaxies as a whole.
- 9) Gravity slows down the rate of the expansion of the universe-spherical-shell. As a result the rotational speed of all proto-galaxies increases autonomously in time. Therefore, galaxies actually rotate faster than what has been suspected up to now.



	proto-star core + hydrogen and helium; no nuclear fusion
	solid core proto-planet
	extremely low concentration of gases; especially hydrogen and helium
	concentration of gases around the central core of the star proto

Figure 57: The continuation of the formation of proto-stars and proto-planets.

All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise

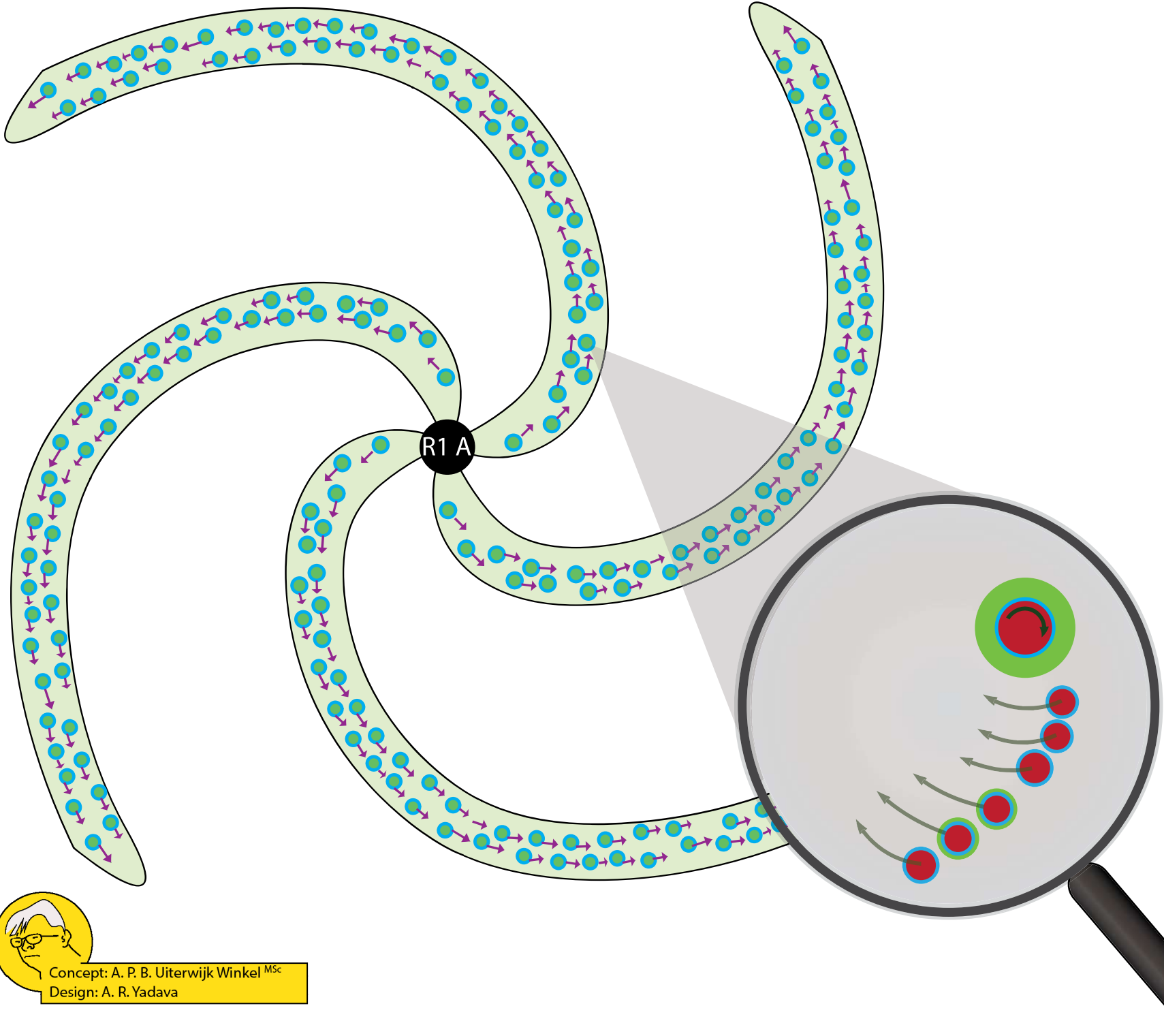


Explanation: **Phase 18 of the cycle of the universe.**

- 1) Currently, the universe-spherical-shell contains 4 to 20 billion proto-galaxies which are being developed. All the solid and pasty matter of the stars and planets contain highly radioactive isotopes.
- 2) The smaller proto-planets revolve around the largest accumulation. Due to gravity a lot of hydrogen and helium gas has accumulated here. It will be transformed into a star.
- 3) First gasses condense and become liquids. Because of gravity these liquids settle on the set of the big proto sun (R3) and 1 – 10 smaller proto planets (R4) rotating in orbits around R3. In this phase 19 all present gasses will condense except hydrogen and helium.
- 4) In this period more than 95 - 98 % of the present hydrogen gas and helium gas is collected around the large proto-sun R3. A minor part of these gasses around the biggest proto-planets becoming 'gas'-planets.
- 5) These stars -under construction - are presented in **Figure 57** as being evenly dispersed. A fixed location in the universe-spherical-shell is suggested, but this is not the case. All proto-galaxies are subjected to 4 to 5 rotations with the rotational speed of 10 - 100 km/s as shown in **Figure 41**.
- 6) The final picture, however, will produce a relatively even distribution of galaxies throughout the universe-spherical-shell.

Figure 58: The condensation of gases and it being deposited on the bigger and smaller cores.
The accumulation of hydrogen and helium especially around the core of the proto-star and less around one or more planets.
Hydrogen and helium do not condensate yet.

All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise



Explanation: **Phase 19 of the cycle of the universe.**

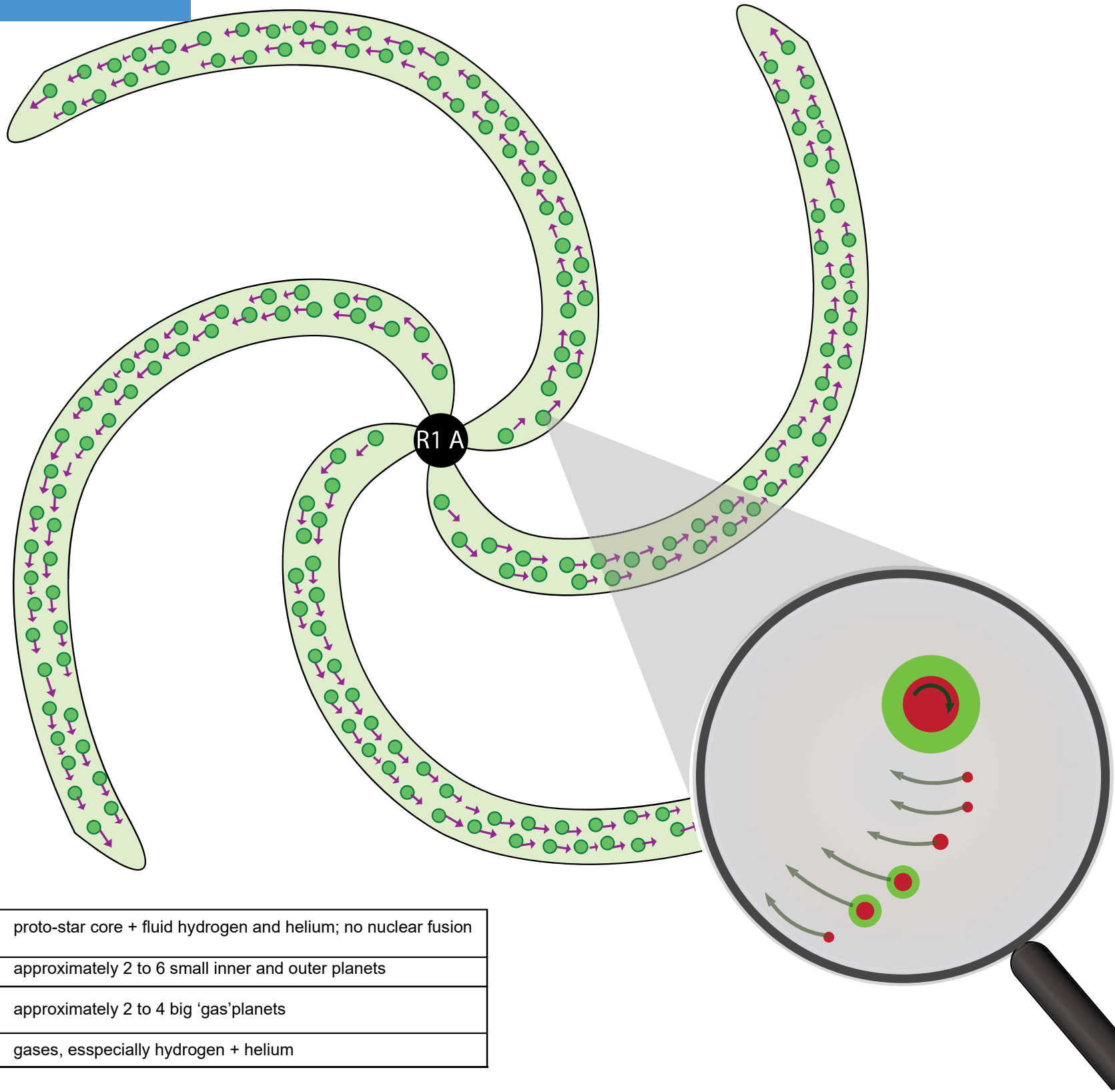
- 1) The universe-spherical-shell cools down. During this phase, all gases condense except hydrogen and helium. Under the influence of gravity the new formed liquids are deposited on the larger centers proto-star **R3**, and on the smaller cores - proto-planets. These fluids are shown as a blue ring.
- 2) During the cooling of the spiral arms the large molecular gases condense first and approximately 75% are deposited on the core of the future star and approximately 25% on the proto-planets and especially on the middle proto-planets. Some of the larger cores that contain matter eventually grow into gas planets.
- 3) During the formation of the proto-star it becomes heavier and, due to the influx of kinetic energy with matter, it starts rotating faster around its axis. This also applies to gas planets, albeit to a lesser extent.
- 4) The expansion of the spiral arms in relation to the central black hole **R1 A** is further slowed down and presumably comes to a standstill.





	proto-star core + hydrogen and helium; no nuclear fusion
	approximately 2 to 6 small inner and outer planets
	approximately 2 to 4 big 'gas' planets
	gases, especially hydrogen + helium
	to liquid condensated gases except hydrogen and helium

Concept: A. P. B. Uiterwijk Winkel ^{MSc}
 Design: A. R. Yadava

Figure 58a: The start and completion of the condensation of hydrogen gas (H₂) around the core of the proto-star and around one or more proto-planets. No condensation of helium gas yet.

All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise

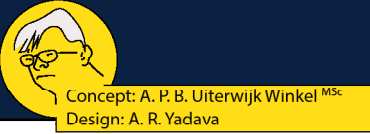


	proto-star core + fluid hydrogen and helium; no nuclear fusion
	approximately 2 to 6 small inner and outer planets
	approximately 2 to 4 big 'gas' planets
	gases, especially hydrogen + helium

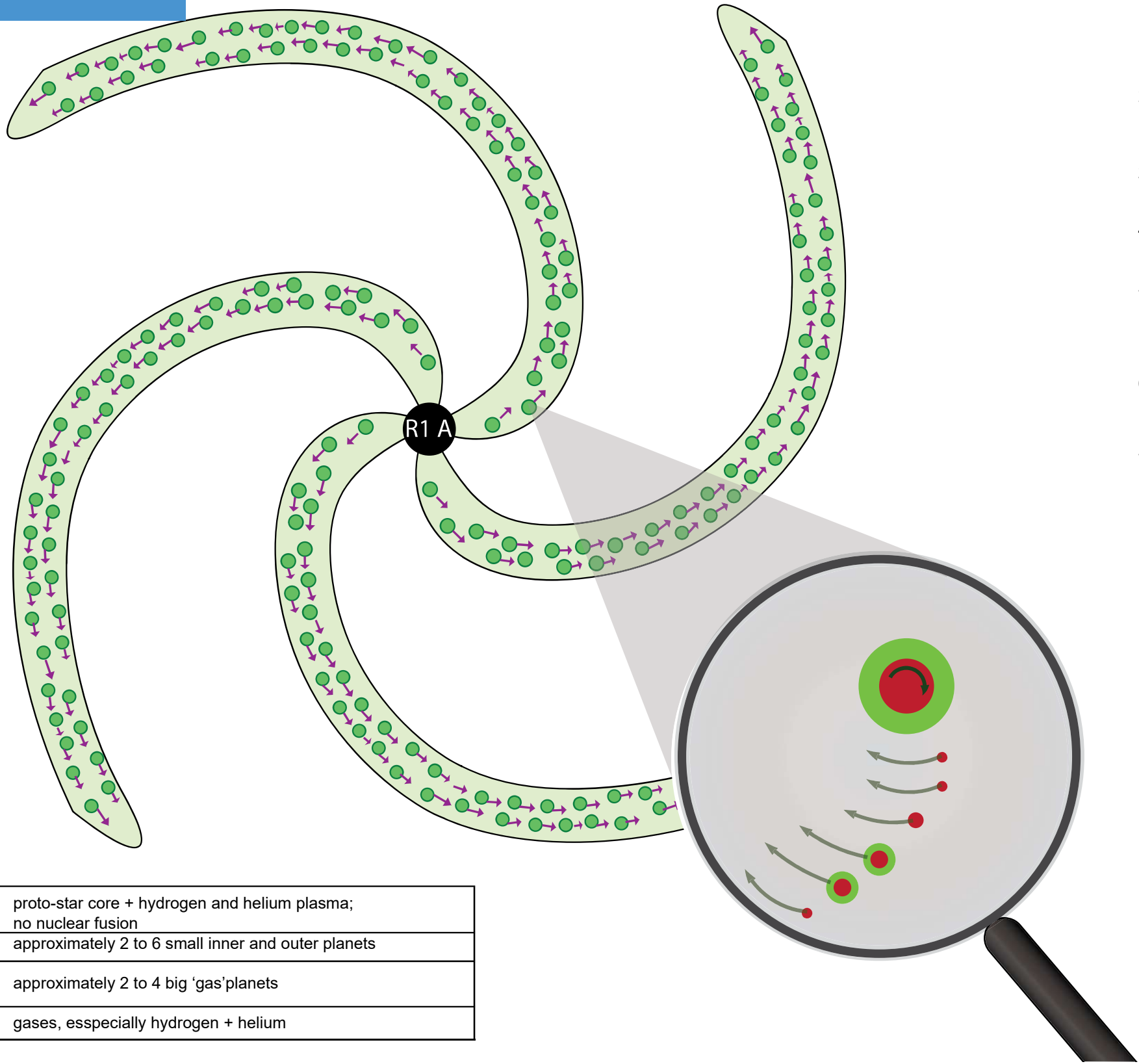
Explanation: **Phase 20** (start condensation of hydrogen) and **phase 21** cycle of the universe with total condensation of hydrogen H₂.

- 1) After the condensation of all the other gases, the large amount of hydrogen gas also condenses. About 98% or more of the liquid hydrogen is deposited on the central core of the future star. A few percent of the liquid hydrogen condenses on the 2-3 future gas planets. No condensation of helium yet.
- 2) During the formation, an enormous amount of liquid hydrogen is deposited on the proto-star. The small blue ring is mixed with the green ring of hydrogen and, as such, disappears.
- 3) The proto-star gets heavier and generates more gravity. This causes an increase in the local gravitational energy. In time, the temperature in the proto-star continues to increase to several million kelvin due to the release of gravitational energy. The pressure also increases.
- 4) In some cases, binaries and triplets of stars will be created.
- 5) Liquid hydrogen flows in from the outside of the pro-star and proto-planet.
- 6) No nuclear fusion of hydrogen takes place in the proto-stars.
- 7) The spiral arms grow slower than the central black hole **R1 A** and eventually come to a standstill. Then the spiral arms start to shrink in the direction of **R1 A**.

Figure 58b: Finally the helium gas surrounding the core of the proto-star and around one or more proto-planets start to condense. The helium reaches the condensed state and is mainly found in the proto-star and much less on the proto-planets.



All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise



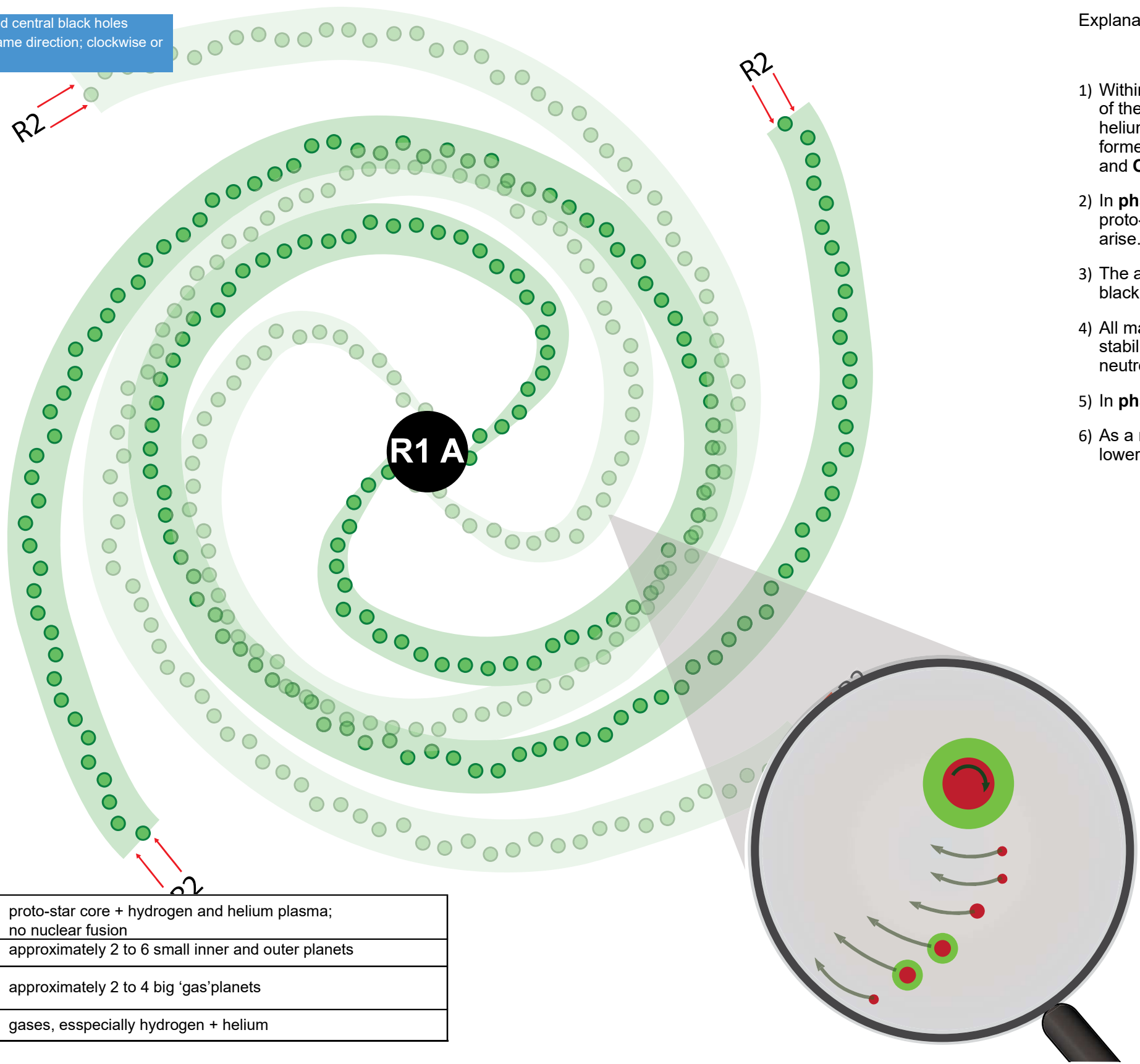
	proto-star core + hydrogen and helium plasma; no nuclear fusion
	approximately 2 to 6 small inner and outer planets
	approximately 2 to 4 big 'gas' planets
	gases, especially hydrogen + helium





Explanation: **Phase 21a of the cycle of the universe** with the complete condensation of helium.

- 1) The universe-spherical-shell cools down so much that the helium gas can condense. The helium present in the starts during **phase 21** originates from the Big Bang explosion during **phase 16**.
- 2) Approximately 98% or more of the helium is deposited on the heavy core of the proto-star. The helium is mixed with the hydrogen gas already present. The hydrogen-helium mixture is indicated by a green zone.
- 3) A relatively small portion of the helium (1% to 2%), just like the hydrogen, fall down on one or more of the future gas planets around the future star.
- 4) Due to the large supply of helium to the proto-star, it gets heavier and therefore generates more gravity. This results in an increase of the local gravitational energy.
- 5) Due to the release of the gravitational energy during the growth of the proto-star, the temperature and pressure increase in time. The temperature in the proto-star continues to increase to 10 to 20 million kelvin. In time, during **phase 22** fusion starts, activated by the presence of radioactive plasma in the core. Only then can we speak of a solar system.
- 6) Nuclear fusion in stars only starts after the helium is almost completely absorbed by the proto-star. However, that is only **phase 22** of the cycle of the universe. During **phase 21a** nuclear fusion of hydrogen does not happen in the proto-stars.
- 7) The expansion of the spiral arms has stalled. During this phase the spiral arms start shrinking slowly in the direction of the central black hole **R1 A**.

Figure 58c: The formation of pre-galaxies with pre-stars and their planets

All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise

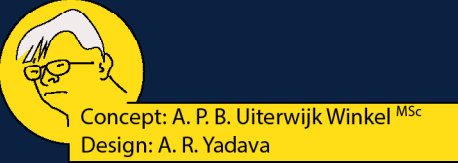


	proto-star core + hydrogen and helium plasma; no nuclear fusion
	approximately 2 to 6 small inner and outer planets
	approximately 2 to 4 big 'gas' planets
	gases, especially hydrogen + helium

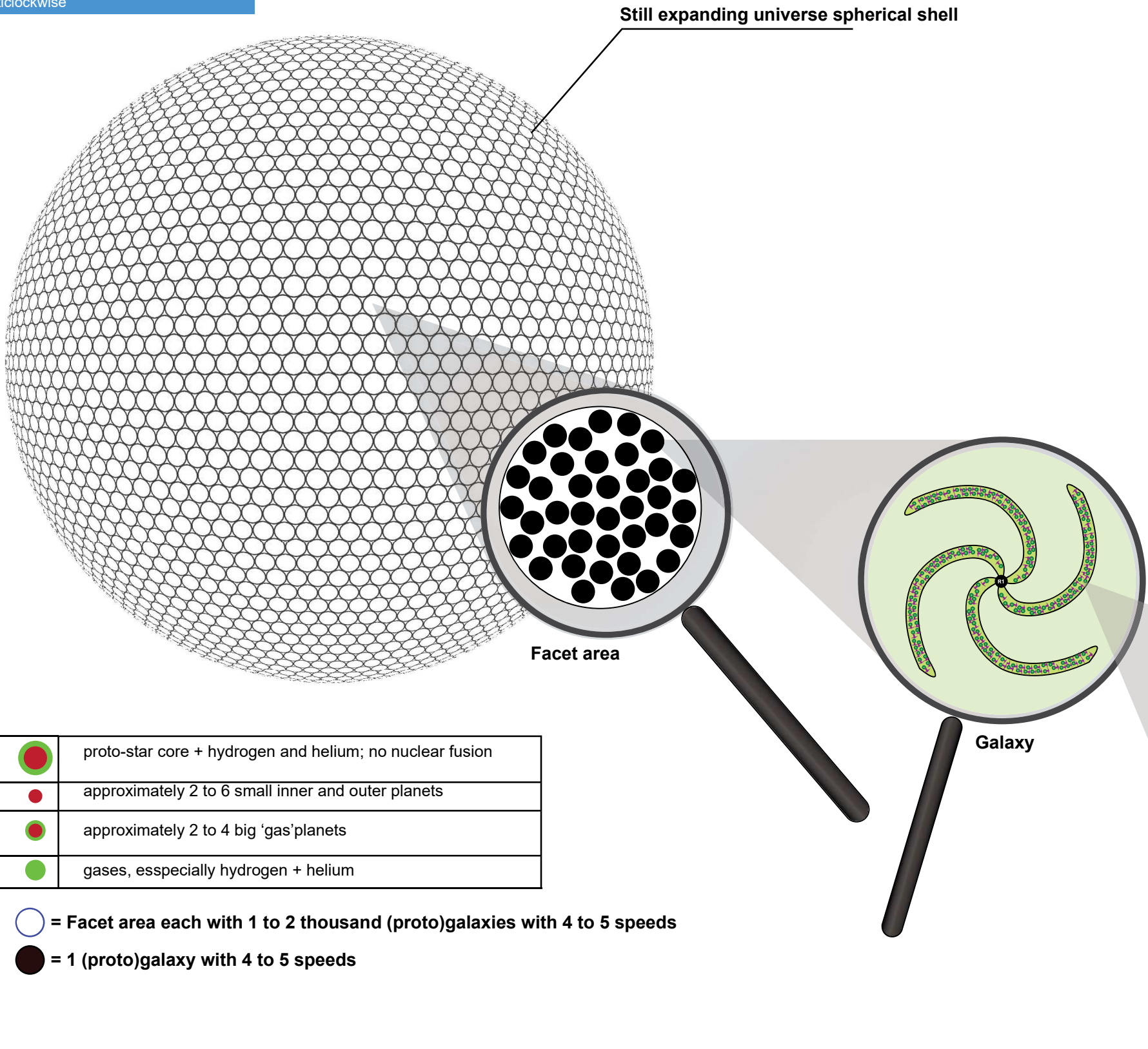
Explanation: **Phases 21 and 21a of the cycle of the universe.**

- 1) Within the universe-spherical-shell 4 to 20 billion pre-galaxies are formed. During the cooling of the universe-spherical-shell, approximately 150 to 200 billion large spheres of hydrogen and helium are formed within each pre-galaxy and around each core 1 to 10 smaller sub-spheres are formed which will each form the core of a planet. Beyond the planets the standard **Kuiper belts** and **Oort clouds** can be expected.
- 2) In **phases 22 and 23** each of the large spheres transforms into a star with around it 1 to 10 proto-planets, A **Kuiper belt** and **Oort cloud** also exist. In some cases binaries or triplets can arise.
- 3) The author assumes that the **Franks**, the spiral arms, will start shrinking towards the central black hole **R1 A** in **phases 21 and/or 21a**.
- 4) All matter in the spheres is still highly radioactive and nuclear fusions take place. The stabilization of isotopes results in the emission of alpha and beta particles and gamma and neutron radiation.
- 5) In **phase 21a**, nuclear fusion in the increasingly hotter pre-stars has not started yet.
- 6) As a result of the radioactive material in **phase 22** the fusion process will only start at a much lower temperature and pressure than in the case with the hydrogen supernovas of **phase 16**.

Figure 59: The formation of proto-galaxies with proto-stars around a core of radioactive matter consisting of primarily hydrogen gas or plasma which has not fused yet.



All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise



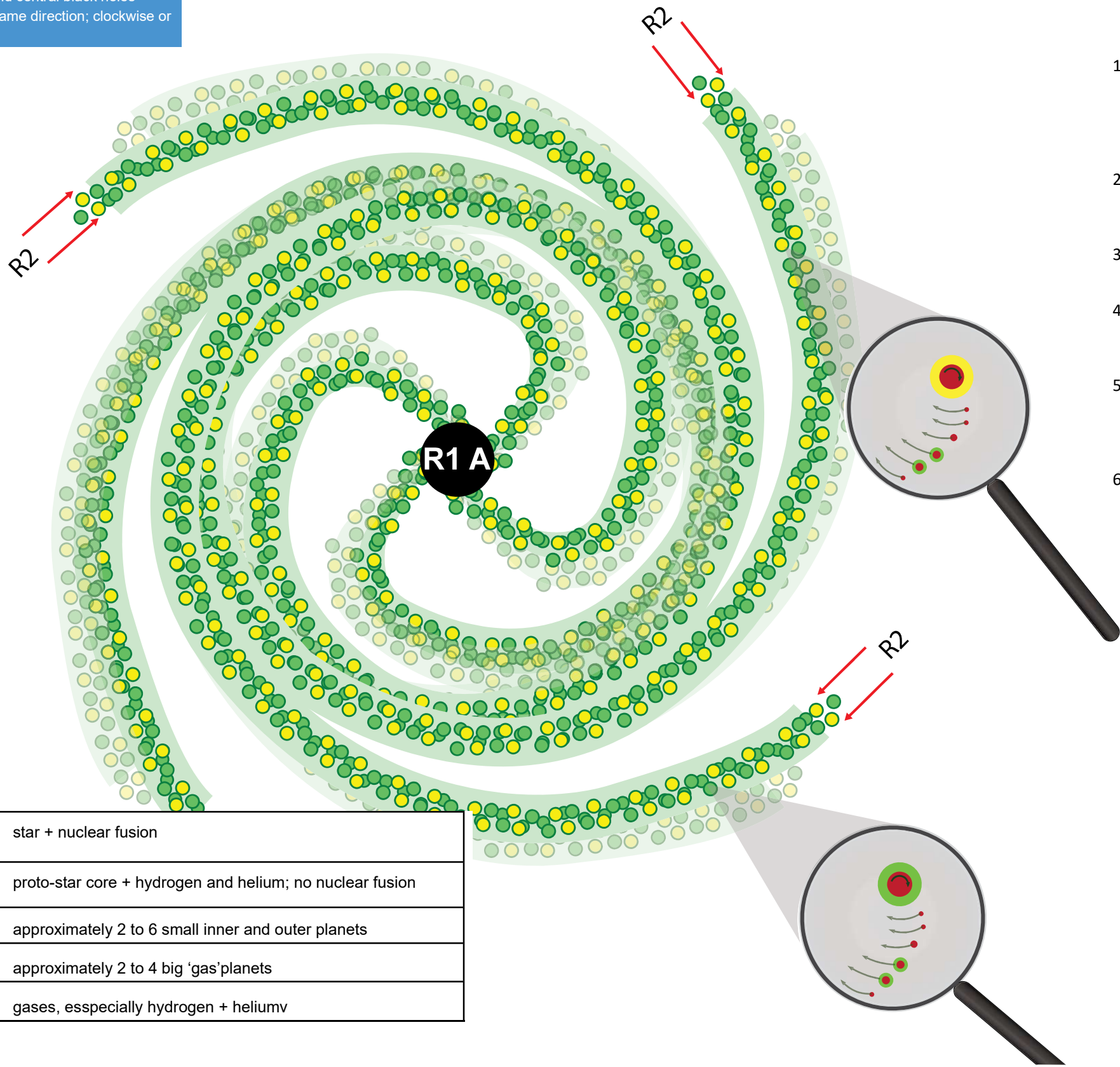
Explanation: Phases 21 and 21a of the cycle of the universe

- 1) During the cooling down of the universe-spherical-shell 150 to 200 billion big spheres are formed in each future galaxy with 1 to 10 smaller sub-spheres each forming the core of a planet.
- 2) Each of these big spheres transforms into a star with a string of 1 to 10 proto-planets. In the outer region around a proto-star one or more proto-planets are formed with much less hydrogen, helium and other gases. They develop into gas planets.
- 3) In some cases binaries will arise, sometimes triplets.
- 4) During **phases 21 and 21a** the **Franks** or spiral arms start shrinking slowly in the direction of the central black hole **R1 A**. Slowly but surely the black hole swallows the spiral arms.
- 5) All the proto-galaxies are subjected to 4 – 5 rotations. The speeds are shown in **Figure 41**. In the end it results in a relatively uniform distribution of the galaxies across the universe-spherical-shell.
- 6) The rotations cause the proto-galaxies to collide with each other. They merge into a bigger proto-galaxy. Some of the mentioned 4 to 5 rotations disappear. (At the end of the expansion of the universe-spherical-shell, the 4 to 5 rotations have completely disappeared)

Figure 60: The formation of spheres with liquid hydrogen around a core of higher radio-active elements. Start of fusion in stars and formation of solar systems.

Concept: A. P. B. Uiterwijk Winkel MSc
Design: A. R. Yadava

All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise



	star + nuclear fusion
	proto-star core + hydrogen and helium; no nuclear fusion
	approximately 2 to 6 small inner and outer planets
	approximately 2 to 4 big 'gas' planets
	gases, especially hydrogen + helium

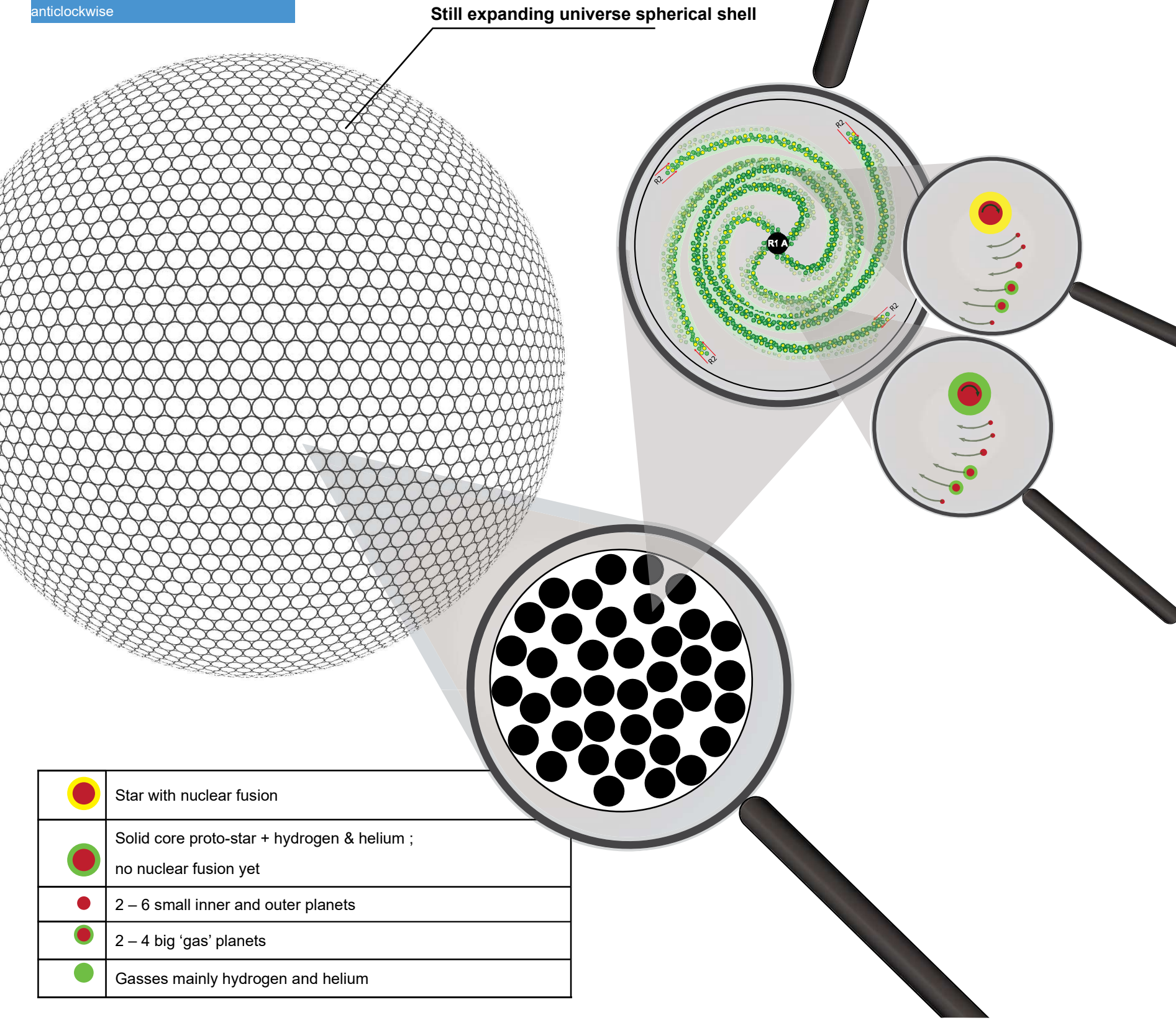
Explanation: Phases 22 and 23 of the cycle of the universe

- 1) During the cooling, 150 to 200 billion years in all future galaxies at first gravity forms tenth of billions of big cores or pre-stars are formed. These pre-stars consisting of higher mostly radioactive elements with hydrogen and helium gasses around them. These pre-stars are surrounded by all kinds of smaller sub-cores and pre-planets. In some cases binaries arise, sometimes triplets.
- 2) The big central core of this pre-star contains about 90% to 95% of the total mass of the higher elements within the solar system still being formed. Approximately 5% to 10% is contained in the proto-planets and is present in the **Kuiper belts** and the **Oort clouds**.
- 3) Eventually, every big core will transform into a star with a string of 1 to 10 proto-planets and an outside and inside areas which contains the **Kuiper belt** and the **Oort cloud**.
- 4) Most material in these spheres is still rather very radioactive and nuclear fusion and fission happens. Stabilization of isotopes results in the emission of alpha and beta particles and neutrons.
- 5) In some of the proto-stars, the temperature has increased so much that thermo-nuclear fusion starts. This is the start of a real solar system. Due to the radioactive elements nuclear fusion of hydrogen starts at a much lower temperature and pressure than the hydrogen supernovas / Big Bangs of **phase 16**.
- 6) The rate of expansion of the spiral arms slow down towards zero and turn in the opposite direction to the central black hole **R1 A**.

Figure 61: The universe-spherical-shell with galaxies containing real stars and pre-stars without a nuclear fusion of hydrogen and helium. Nuclear fusion starts around a sphere which contains radioactive elements.

Concept: A. P. B. Uiterwijk Winkel MSc
Design: A. R. Yadava

All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise



Explanation: **Phases 22 and 23 of the cycle of the universe**

- 1) Now we live in **phase 23** of the cycle of the universe. Goal of **phase 23** is: a) by nuclear fusion to transform all atoms and thus all present mass, matter and kinetic energy into atoms \geq beryllium (Be) and b) to merge these atoms into the super black holes of the galaxies. At the end of **phase 23** all galaxies are completely disappeared in their central black hole.
- 2) **Phase 23** started about 15 billion years ago and takes 450 to 500 billion years to complete. All the hydrogen-helium spheres continue to grow until nuclear fusion starts spontaneously in the proto-stars.
- 3) There are a total of 4 to 20 million facet areas, each with 1 to 2 thousand galaxies each with 100 to 200 billion of active stars being formed. In principle all galaxies rotating the same direction. During the this period all emitted photons are transferred into protons, electrons and hydrogen again within a period of 14 – 18 billion years.

See **figures 72 and 73**. From this new hydrogen new stars are formed.

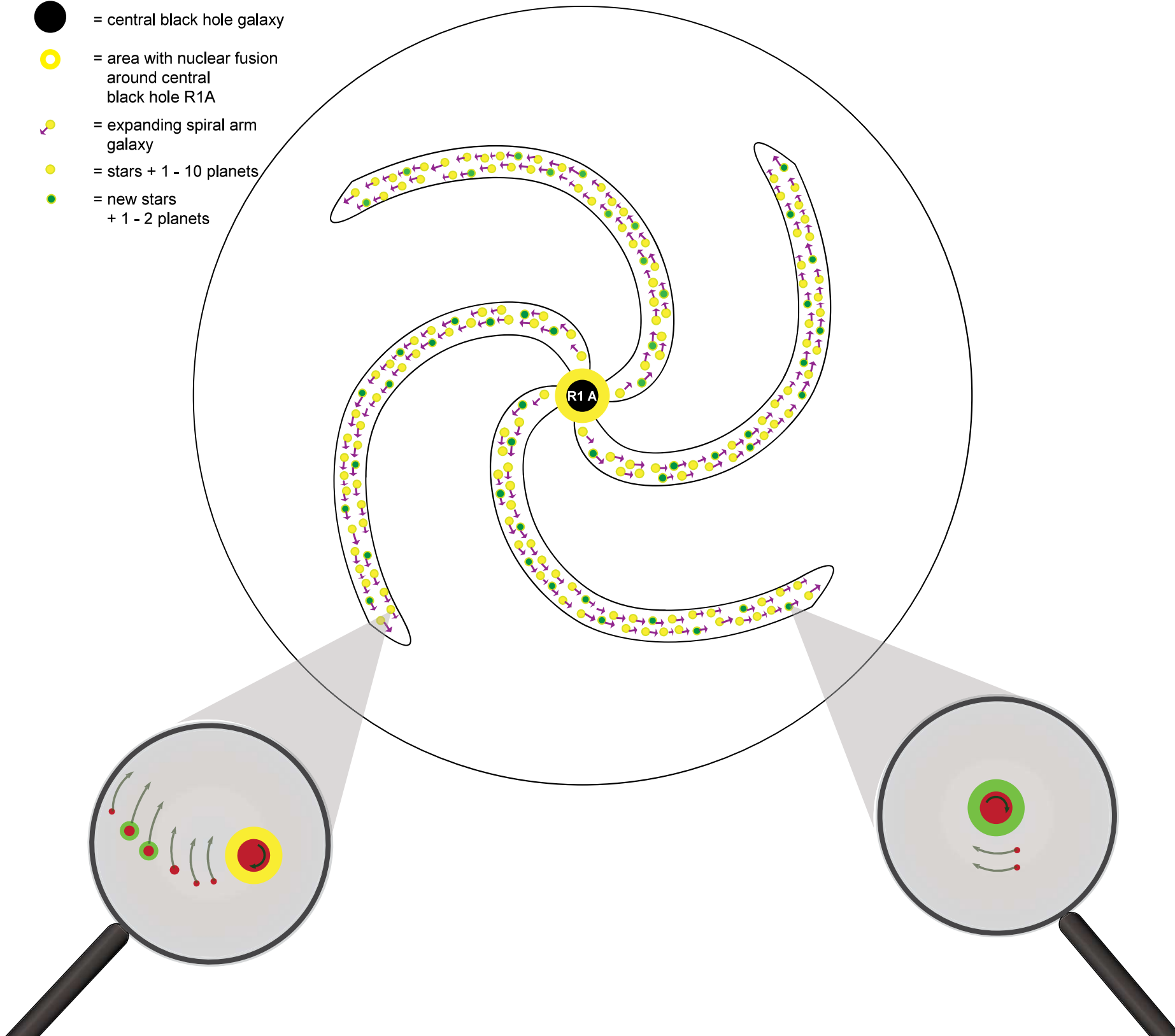
See **documents F1a 2014, F1b, F1c and F1d** website www.uiterwijkwinkel.eu .

- 4) This process of regenerating photons (= energy + particle) into hydrogen takes about 14 – 18 billion (10^9) years. This period marks our maximum *event horizon* on the universe.
- 5) During **phase 23**, all of the hydrogen is fused till beryllium (Be) and higher. This is the most active period in the cycle of the universe. In all 4 – 20 million *facet areas* finally all present 1 – 2 thousand galaxies merge together into one supersize and super cold (2,7 kelvin) black hole with only one angular speed of $1/3^{\text{th}}$ – $1/2^{\text{th}}$ the speed of light.
- 6) At the end of **phase 23** the expansion comes to a complete stop (**phase 24**). In **phase 25** the universe-spherical-shell of supersized *facet black holes* starts to shrink again.
- 7) For tens of billions of years all proto-galaxies are subjected to not only 4 to 5 older rotations but also to the expansion speed; see **Figure 41**. New rotation speeds are added. Due to the merging of galaxies the now present 9 to 11 rotations will completely disappear in the following 400 to 450 million years. At the end of **phase 23** the expansion speed is zero and just the angular speed of this supersized black holes remain. After **phase 24** the universe-spherical-shell starts shrinking.
- 8) During **phase 23** the facet areas and galaxies will still be relatively evenly distributed across the universe-spherical-shell.

Figure 62: From proto-stars to fusing stars in real spiral (S) galaxies.

All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise

- = central black hole galaxy
- = area with nuclear fusion around central black hole R1A
- = expanding spiral arm galaxy
- = stars + 1 - 10 planets
- = new stars + 1 - 2 planets

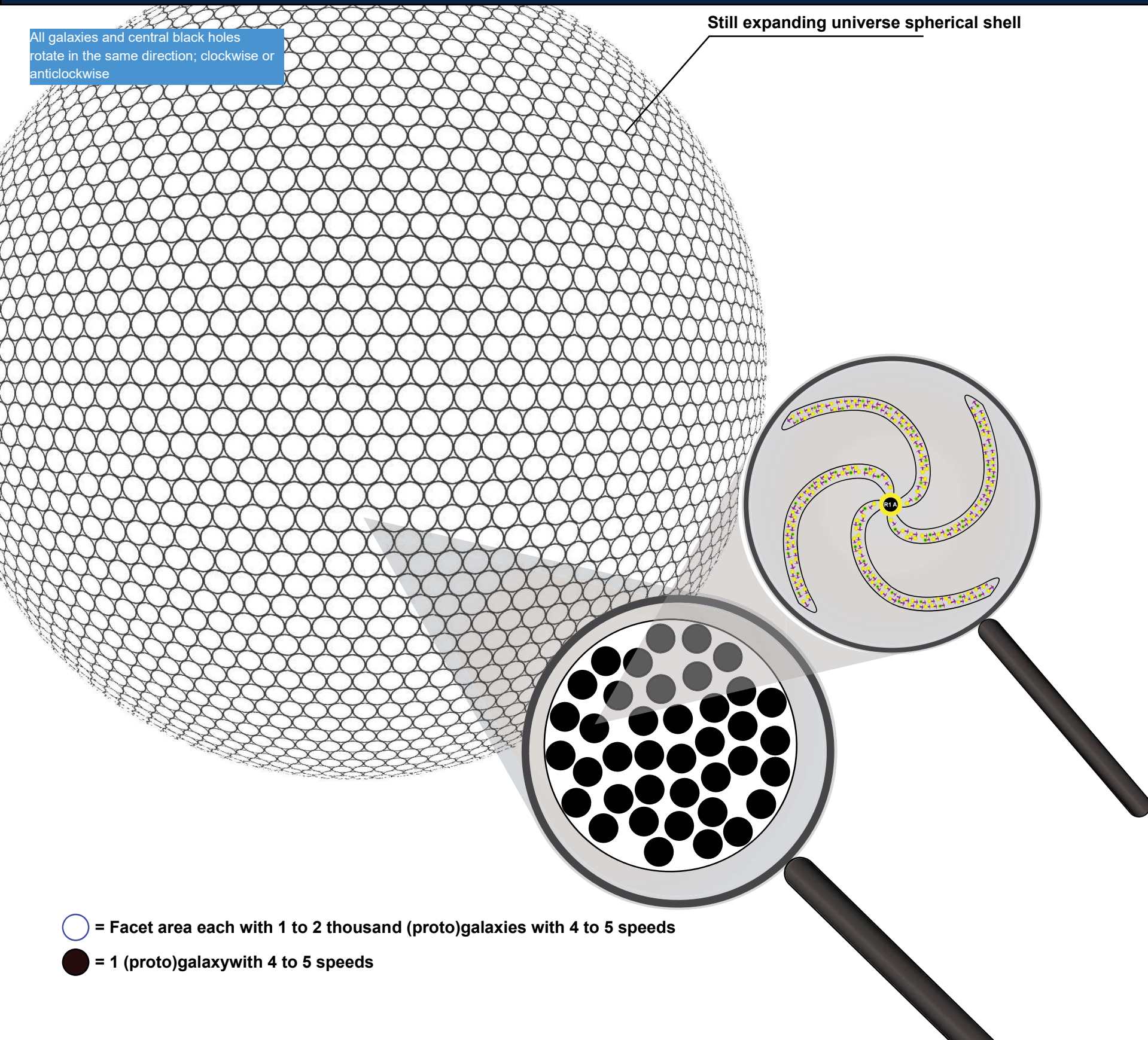


Explanation: **Phase 23 of the cycle of the universe**

1) The purpose of **phase 23** is:

- a)** To allow the hydrogen, helium and lithium via local stars to fuse in phases to the element beryllium (Be) or higher, Only elements \geq Be are able to transform into black hole atoms. Only atoms \geq Be are accepted by a black hole and can enter such a black hole. The electron-‘shells’ of the elements H, He and Li cannot collapse towards the atom nucleus. H, He and Li cannot become black-hole atoms and therefore they cannot be absorbed into a black hole,
 - b)** All the radiation (neutrino’s, photons and neutrons) emitted by stars change back into protons, electrons and hydrogen. See **Figures 72 and 73**. For the hydrogen to form new stars as well as converting the hydrogen via nuclear fusion into beryllium and higher elements,
 - c)** At the end of **phase 23**, all the neutrino’s, photons, matter, particles and energy should be completely captured as black hole atoms \geq Be in one of the 4 to 20 million *holes* of the universe-spherical-shell.
- 2) This regenerating process of neutrinos and photons towards protons, electrons and hydrogen take 14 to 18 billion years before they are completed. As a result of these formations, all older information of the universe is consistently being erased. This older information of this universe can only be retrieved by making a **mathematically model of the universe** and its **cycle!**
 - 3) Each yellow dot in **Figure 62** represents one star with nuclear fusion with a string of 1 - 10 proto-planets around it. On the inside and outside one would find a **Kuiper belt** and a **Oort cloud**. The green dots are new formed stars without nuclear fusion.
 - 4) The fusion process in stars and the completion thereof during the lifetime of the star elapses relatively quietly and evenly and not as explosive as was the case with the hydrogen supernovas or Big Bangs.
 - 5) Stars often only explode at the end of this fusion process when all the lower elements have fused and the star eventually collapses into a white dwarf, a neutron star or to a black hole. These compact celestial bodies are all suitable for inclusion in the central black hole of the galaxy and finally in the central black hole of the facet area.
 - 6) In **phase 23** and the corresponding period of 400 to 450 billion years, all the existing stars, planets and their radiation eventually disappear into one of the 4 to 20 billion *central black holes* of galaxies and into one of the 4 – 20 million *central facet black holes*.
 - 7) At the end of **phase 23** the expansion of the universe-spherical-shell is only completed when all the atoms, molecules and kinetic energy of the galaxies are taken up in one of the 4 to 20 million *central facet black holes* present in the universe-spherical-shell.
 - 8) The shrinking speed of the spiral arms relative to **R1 A** increases in the following billions of years. In about 400 to 450 billion years, the spiral arms will have disappeared again into the central black hole **R1 A**.

Figure 63: Still expanding universe-spherical-shell with 4 - 20 million facet areas each filled with 1 – 2 thousand or more galaxies.



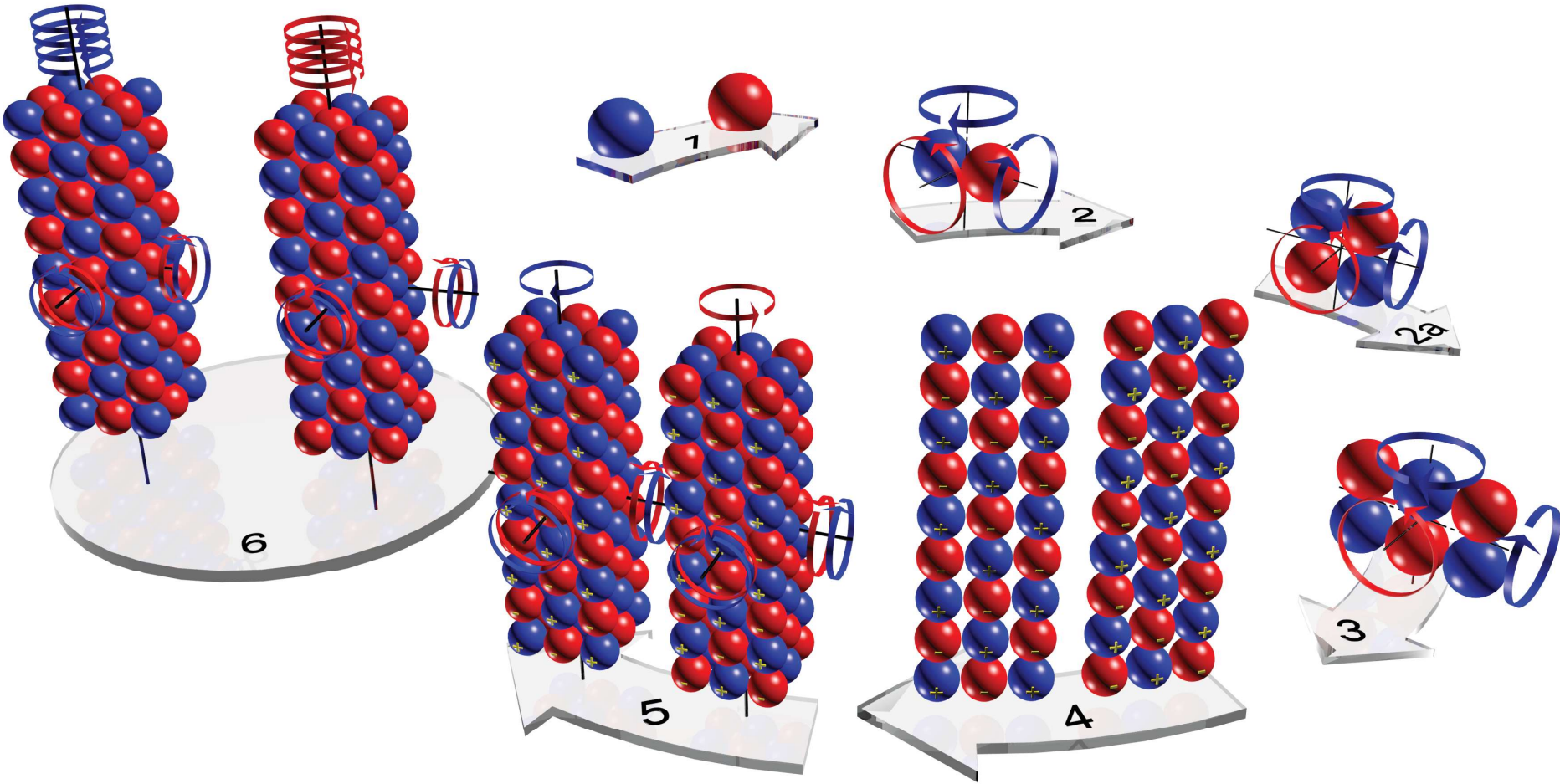
Explanation: **Phase 23 of the cycle of the universe**

- 1) Nuclear fusion happens in all the real stars/ solar systems. In the ever-expanding universe-spherical-shell there are 4 to 20 million *facet areas* each containing 1 – 2 thousand or more galaxies. Each galaxy contains 150 ± 50 billion stars; each star with their 1 to 10 accompanying planets. New stars will have just 1 - 2 planets.
- 2) In the universe, light beams are bent into spiral paths of light 100% through the universe-spherical shell of galaxies due to the present extremely low concentrations of hydrogen and helium. (**Document G9** and **Figure 76a**). This bents of light causes all kinds of double counting. Therefore, the number of galaxies is possible less by factor 5 to 10 than what has been assumed in 2017 namely 100 to 200 billion. It also has an large effect on the calculated mass and energy of the universe and mass and energy balances. There are less galaxies than we observe!
- 3) The hydrogen fusion process in stars happens relatively quietly and lasts 25 to 35 billion (10^9) years. Big stars fuse and 'burn' relatively quickly. In small stars the fusion process happens at lower temperatures and thus consumes more time.
- 4) It is only at the end of the fusion process that the star becomes a red giant. After that phase it implodes explosively into a compact celestial body as either a white dwarf, neutron star or into a local black hole.
- 5) At the end of **phase 23**, in 400 - 450 billion years from now, the expansion velocity of the universe-spherical-shell will be reduced to zero completely. The universe reaches its maximum size with a radius of 3.0 to 3.5 billion light years relative to the **center C**.
- 6) In all facet areas by collisions between the galaxies the current present 9 to 11 rotational speeds disappear through the merging of smaller galaxies into larger ones (**LIGO**). At the end of the expansion only one remains with only one angular velocity of $1/3^{\text{th}}$ – $1/2^{\text{th}}$ the speed of light.
- 7) The energy released as a result of the deceleration of the expansion velocity of the universe-spherical-shell by gravity, is completely converted into the rotational energy/ speed of each *facet area* and all present galaxy and stars. Eventually, that energy is completely converted into the rotational energy of the remaining central facet black hole.(the angular speed finally will be $1/3^{\text{th}}$ – $1/2^{\text{th}}$ the speed of light)
- 8) The expansion rate of the spiral arms relative to **R1 A** is opposite to the central black hole. During the following 350 to 450 billion years of **phase 23**, the spiral arms will, under the influence of gravity, will completely disappear into the black hole **R1 A**. See the subsequent figures.
- 9) During **phase 23** the 4 - million facet areas each with 1 - 2 thousand present galaxies will still be relatively evenly distributed over the universe-spherical-shell. The number of galaxies and their central black holes decreases gradually as shown in **LIGO**.
- 10) The universe-spherical-shell is much more dynamic than shown here. This dynamic can only be shown on a mathematically model of the universe-spherical-shell and its cycle.

○ = Facet area each with 1 to 2 thousand (proto)galaxies with 4 to 5 speeds
● = 1 (proto)galaxy with 4 to 5 speeds

Figure 63a: The conversion of infra-red radiation and particle radiation to protons and electrons and ultimately to hydrogen. Formation of new stars from radiation of neutrino's and photons.

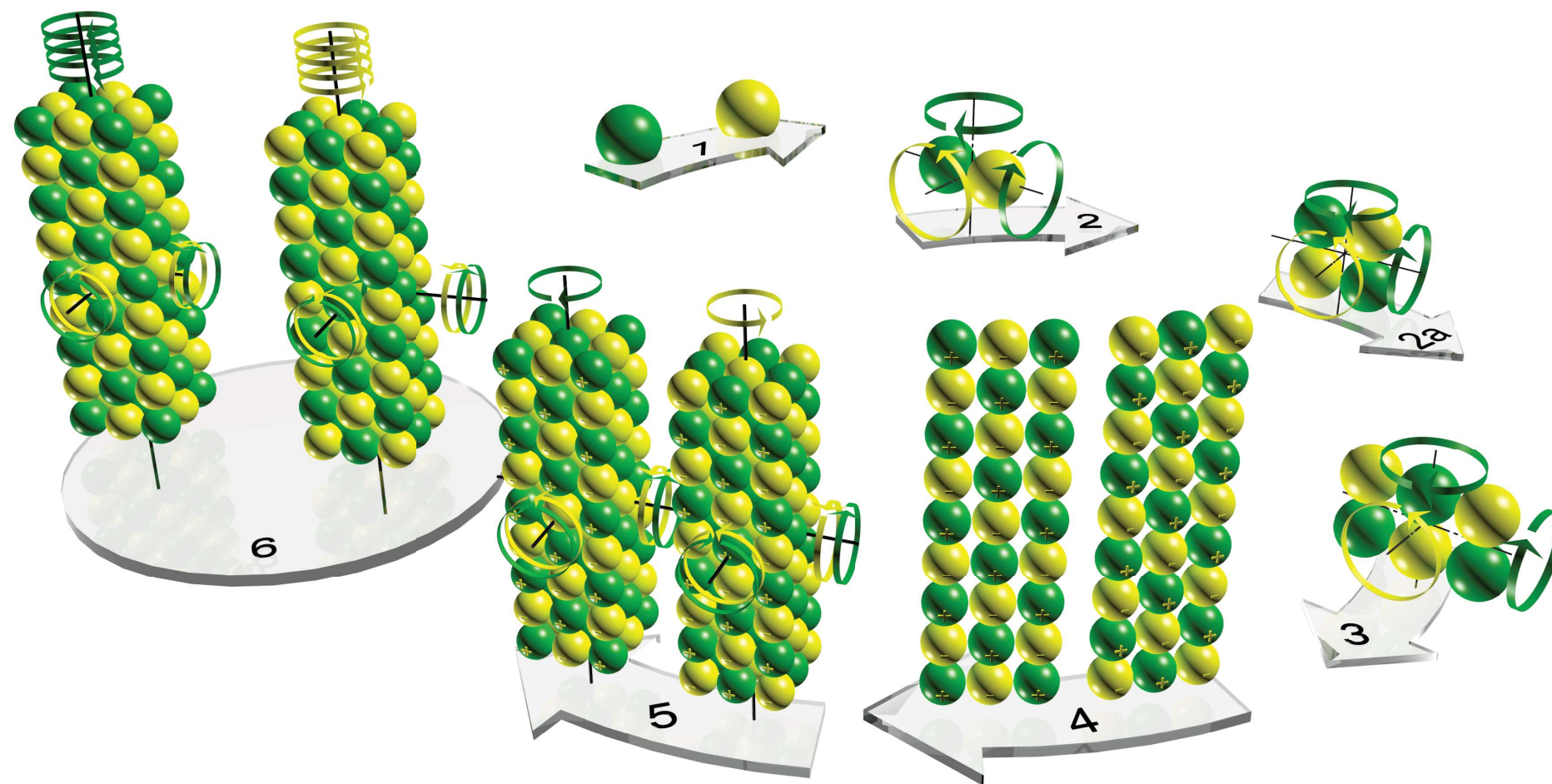
Explanation: **Phases 17 - 23 of the cycle of the universe**



- 1 = proton higgs / anti proton higgs
- 2 = proton neutrino / anti proton neutrino
- 3 = proton double neutrino / anti proton double neutrino
- 4 = proton photon / anti proton photon (infrared photons)
- 5 = 1/3th part of proton / anti proton
- 6 = proton / anti proton with $E = mc^2$ added rotation energy → matter or anti matter

- 1) During its lifetime as a result of the fusion process each star ejects. gigantic amounts of *neutrinos, infrared photons* and *particles* of the proton with mass and matter These particles remain somewhere. Neutrinos and photons are majorana particles and build up from an equal number of *super symmetrically* a) proton Higgs and anti-proton Higgs particles or b). electron Higgs and anti-electron Higgs particles These proton and electron majoranas are real particles but without any measurable mass, charge and spin. See **Document F1b** www.uiterwijkwinkel.eu
- 2) These electromagnetic radiation and majoranas carry internal charges and spins that are not equal to zero. All forms of radiation (except for time and gravity) are deflected in such a way that they only can continue to move within the *universe-spherical-shell* completely and they cannot escape out of that universe-spherical-shell / the universe.
- 3) Therefore, in practice, the universe serves as a complete closed system from which no radiation can escape. Only the mass and energy free 'radiation', namely *time and gravity*, can leave this universe-spherical-shell.
- 4) All forms of electromagnetic *infra-red* / proton related radiation and particle radiation will be transformed into protons (and separate electrons) and finally completely converted into hydrogen within a period of approximately 14 - 18 billion years until they end in one of the billions of galaxies. The hydrogen, which has been transformed, have to undergo fusion by star formation to reach the element beryllium (Be) and higher. Only these atoms can transfer into black hole atoms
See **Documents F1a 2014** (the four super symmetrically Higgs particles), **F1b** (Majoranas), **F1c** (formation of proton and electron), **F1d** (formation of elements periodic table and forces) and **F1e** (transformation of ordinary atoms into black hole atoms).
- 5) At the end of **phase 23** all infra-red and light radiation must be completely transformed, into protons and electrons and further into hydrogen. In stars all hydrogen via nuclear fusion, should be fused to elements of the periodic system \geq beryllium and eventually transformed into black hole atoms and black holes. All black holes in each facet area will be incorporated into the *central facet black hole*.

Figure 63b: The conversion of electromagnetic radiation of light and particle radiation into electrons, and with protons ultimately to hydrogen. Formation of new stars from radiation.

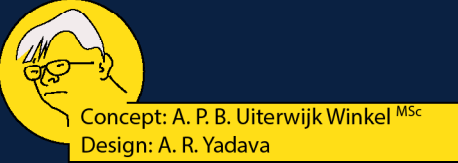


- 1 = electron higgs / anti electron higgs
- 2 = electron neutrino / anti electron neutrino
- 3 = electron double neutrino / anti electron double neutrino
- 4 = electron photon / anti electron photon (light photons)
- 5 = 1/3th part of electron / anti electron
- 6 = electron / anti electron with $E = mc^2$ added rotation energy → matter or anti matter

Explanation: Phase 17 - 23 of the cycle of the universe

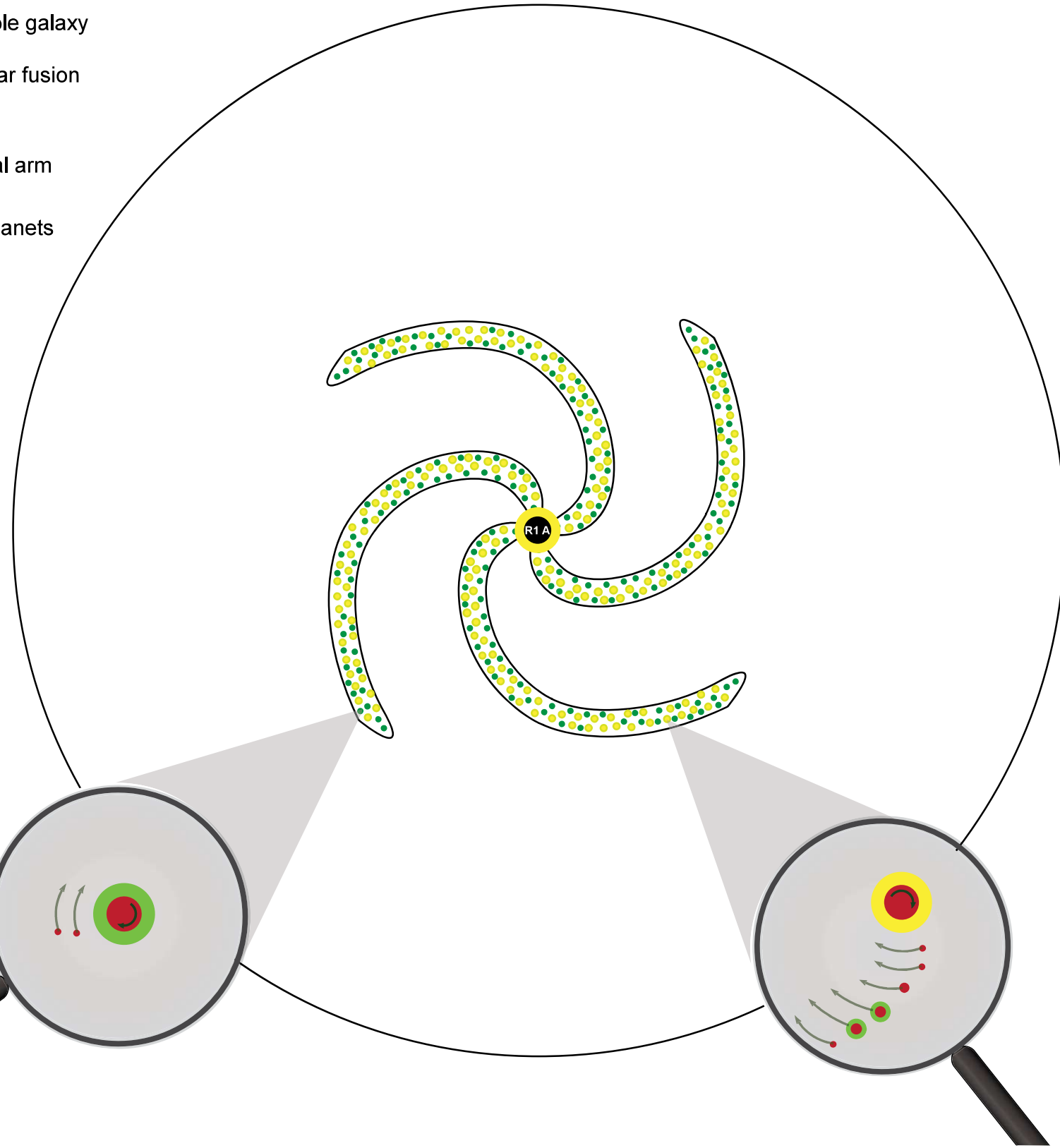
- 1) During its lifetime as a result of the fusion process each star ejects. gigantic amounts of *neutrinos, light photons* and *other electron related particles* with mass and matter These particles remain somewhere. Neutrinos and photons of the electron are majoranas and build up from an equal number of *super symmetrically* electron Higgs and anti-electron Higgs particles. These majoranas are without any measurable mass, charge and spin. See **Document F1b** www.uiterwijkwinkel.eu
- 2) These electromagnetic radiation and majoranas carry internal charges and spins that are not equal to zero. All forms of radiation (except for time and gravity) are deflected in such a way that they only can continue to move within the *universe-spherical-shell* completely and they cannot escape out of that shell and universe.
- 3) Therefore, in practice, the universe-spherical-shell serves as a complete closed system from which no radiation can escape. Only the mass and energy free 'radiation', namely time and gravity, can leave the universe-spherical-shell.
- 4) All forms of electromagnetic infra-red radiation and particle radiation will be transformed into electrons (and separate protons) and finally completely converted into hydrogen within a period of approximately 14 - 18 billion years until they end in one of the billions of galaxies. The hydrogen, which has been transformed, have to undergo fusion via star formation to reach the element beryllium and higher. These atoms can transfer in black hole atoms See **Documents F1a 2014** (the four super symmetrically Higgs particles), **F1b** (Majoranas), **F1c** (formation of proton and electron), **F1d** (formation of elements periodic table and forces) and **F1e** (transformation of ordinary atoms into black hole atoms).
- 5) At the end of **phase 23** all infra-red (proton related) and light (electron related) radiation must be completely transformed, into protons and electrons and further into hydrogen. In stars all hydrogen via nuclear fusion, should be fused to elements of the periodic system \geq beryllium and eventually transformed into black hole atoms and black holes. All black holes in each *facet area* will be incorporated into one *central facet black hole*.

Figure 63c: The conversion of all the electromagnetic radiation and particle radiation to protons, electrons, and finally hydrogen. Formation of new stars from that more recently formed new hydrogen.



All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise

- = central black hole galaxy
- = area with nuclear fusion around central black hole R1A
- ⚡ = expanding spiral arm galaxy
- = stars + 1 - 10 planets
- = new stars + 1 - 2 planets



Explanation: Phase 23 of the cycle of the universe

- 1) All the stars emit neutrinos, photons of light and infra-red and all kind of particle radiation with mass and matter. **Figures 63a and 63b** show the reconstruction of protons and electrons from that radiation of neutrino's, photons and particles.
- 2) This reformation of protons, electrons and hydrogen from radiation takes 14 to 18 billion years. This process takes place within the universe-spherical-shell. All older radiation than 14 billion years are completely converted into new matter (protons, electrons and hydrogen). So all information in universe older than 13.8 billion years is completely destroyed and disappeared.
- 3) Seen from Earth our maximum event horizon is now *13.8 billion light year* may be 14 billion light year. Everywhere in the universe this event horizon is the same. This universe itself must be already 40 – 45 billion years old! The first 30 billion years we cannot observe anymore.
- 4) In Figure 63c the existing stars (yellow spheres with fusion and many surrounding planets) and the new stars to be formed (green spheres without fusion yet and yellow spheres with few planets) appear side by side.
- 5) At the end of phase 23 all radiation of light and infra-red must be converted completely into protons, electrons, hydrogen and, via nuclear fusion, into higher elements of the periodic table. Ultimately, these elements must be transformed into black hole atoms and are included in one of the 4 to 20 billion central black holes of galaxies and finally in one of the 4 – 20 million central facet black holes.
- 6) At the end of **phase 23** all radiation and kinetic energy is captured in the 4 – 20 million *central facet black holes*. At that very moment the expansion of the universe-spherical-shell ends.

Figure 63d: The conversion of all electromagnetic radiation and particle radiation to protons, electrons and, finally, hydrogen. Formation of stars from this new hydrogen.

All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise

Still expanding universe spherical shell

See figure 63e

See figure 63f

See figure 63f

○ = Facet area each with 1 to 2 thousand (proto)galaxies with 4 to 5 speeds
● = 1 (proto)galaxy with 4 to 5 speeds

Explanation: Phase 23 of the cycle of the universe

- 1) In time (14 - 18 billion years) all by stars and supernovae emitted neutrinos, photons and particle radiation are transformed back into protons, electrons and hydrogen. The hydrogen is again converted to beryllium and higher elements via fusion in stars.
- 2) For tens of billions of years stars fuse their hydrogen into beryllium and higher elements fully. The end of the life cycle of stars usually happens explosively. This creates compact celestial objects such as white dwarfs, red giants, neutron stars and local black holes. All of them are able to be taken up by the central black hole **R1 A**.
- 3) During a period of the next 350 - 450 million years the number of stars and new stars still to be formed from hydrogen will decrease. Within each *facet area* the number of galaxies will also decrease with time by 2500 - 3000 collisions between galaxies. In every *facet area* only one superlarge *central facet black hole R1 Fa* remains.
- 4) The expansion speed of the universe decreases to zero. This expansion of the universe-spherical-shell can only end when a) all the radiation and b) all the hydrogen, helium and lithium is locked up, (in the form of black hole atoms \geq Be), in the *central black hole of the galaxy* and finally by collisions between galaxies in the *central facet black hole R1 Fa*. (LIGO).

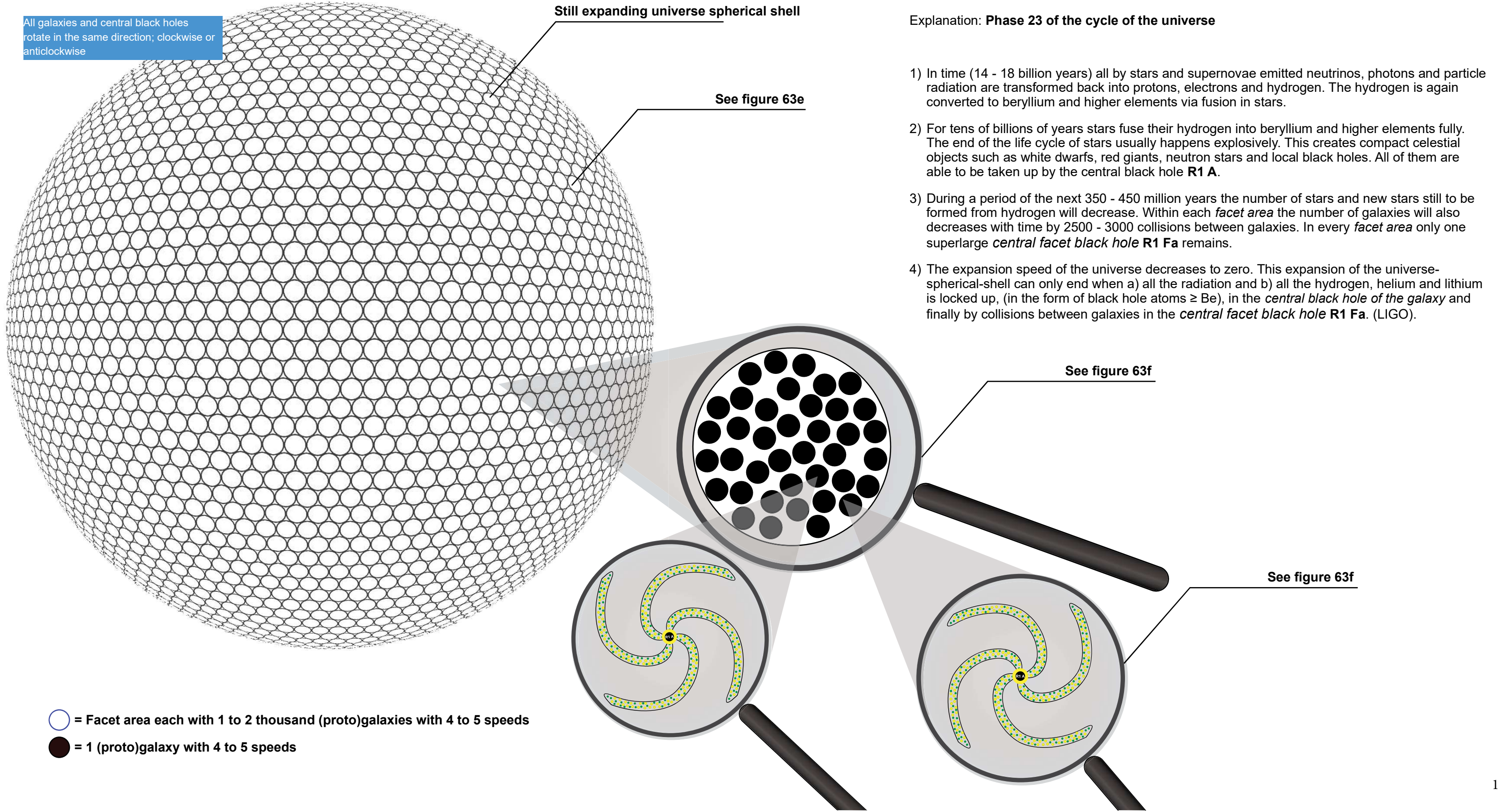


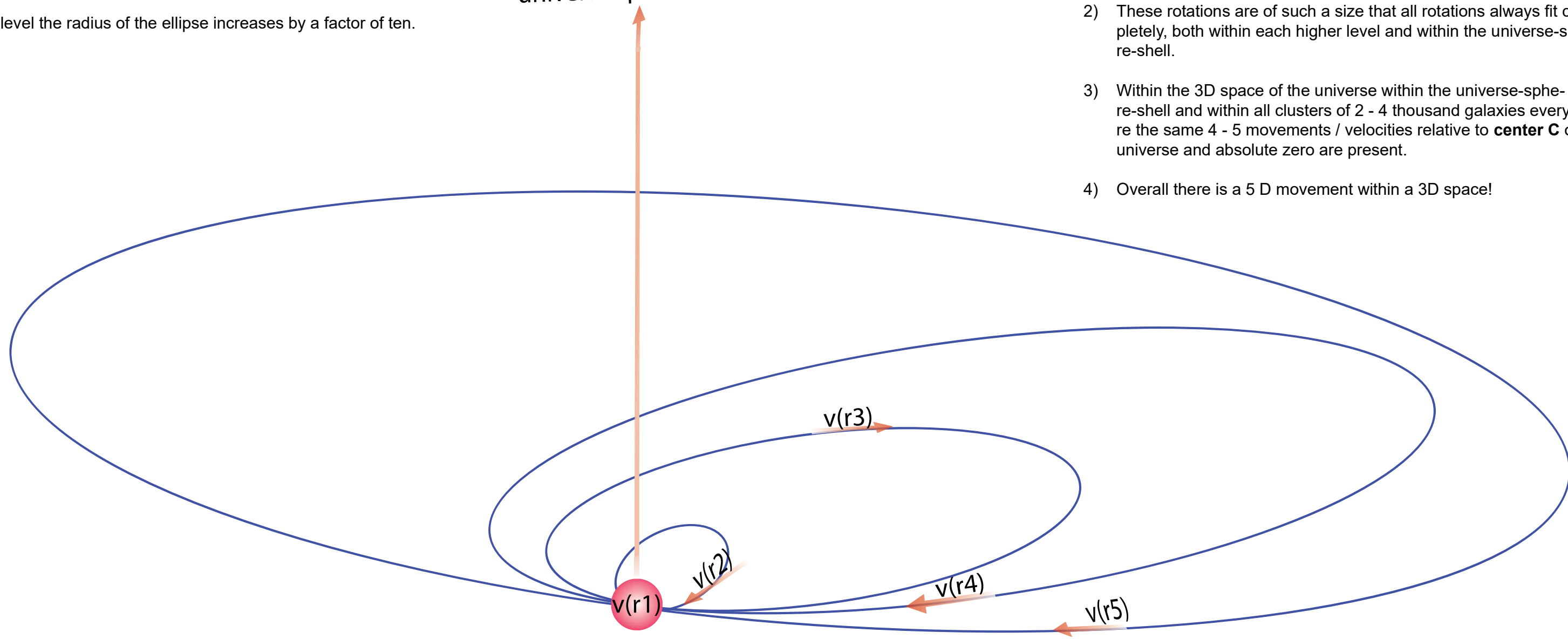
Figure 63e: The 4 to 5 rotational movements of galaxies in the universe-spherical-shell (USS), relative to each other at the level of clusters of 2 - 4 thousand galaxies:



$v(r1)$ = the own rotation of 1 galaxy.
 $v(r2)$ = the rotation as a group of approximately 5 - 10 galaxies. $v(r3)$ = the rotation as a group of dozens of galaxies.
 $v(r4)$ = the rotation as a group of many dozens of galaxies.
 $v(r5)$ = the rotation as a group of hundreds of galaxies.

** At each level the radius of the ellipse increases by a factor of ten.

$v(e)$ = expansion speed universe spherical shell



- 1) At the clusters of galaxies, there is everywhere:
 - a) A decreasing but always exactly equal expansion rate of the universe-sphere-shell and
 - b) Within every cluster present within the universe-sphere-shell there are 4 - 5 forms of elliptical rotations on an ever-larger scale. The speeds are a few hundred kilometers per second.
- 2) These rotations are of such a size that all rotations always fit completely, both within each higher level and within the universe-sphere-shell.
- 3) Within the 3D space of the universe within the universe-sphere-shell and within all clusters of 2 - 4 thousand galaxies everywhere the same 4 - 5 movements / velocities relative to **center C** of the universe and absolute zero are present.
- 4) Overall there is a 5 D movement within a 3D space!

Figure 63f: Number of 5-6 speeds of atoms (planets) at the level of individual galaxies:

$v(r6)$ = rotation speed spiral arm galaxy about its own axis**.
 $v(r7)$ = rotation speed of a few to tens of stars around its own point**.
 $v(r8)$ = rotation speed of the sun / star about its own axis**.
 $v(r9)$ = the rotation of a planet around its star**.
 $v(r10)$ = own rotation speed of the planet.
 $v(r11)$ = expansion rate of the universe-sphere-shell.

** At each level the radius of the ellipse increases by a factor of hundreds and more.

- 1) At the clusters of galaxies, there is everywhere:
 - a) A decreasing but always exactly equal expansion rate of the universe-sphere-shell and
 - b) Within every cluster present within the universe-sphere-shell there are 4 - 5 forms of elliptical rotations on an ever-larger scale. The speeds are tens to a few hundreds kilometers per second.
- 2) These rotations are of such a size that all rotations always fit completely, both within each higher level and within the universe-sphere-shell.
- 3) Within the 3D space of the universe, within the universe-sphere-shell and within all galaxies, the same 5 - 6 movements / velocities are observed everywhere relative to **center C** and the absolute zero point of the universe.
- 4) Within all star systems there is everywhere a 5 to 6 dimensional movement within a 3D space!
- 5) Over-all, all atoms in the universe are subject to an eleven-dimensional movement within the 3D space and time of the universe.

$v(11)$ = expansion speed
universe spherical shell

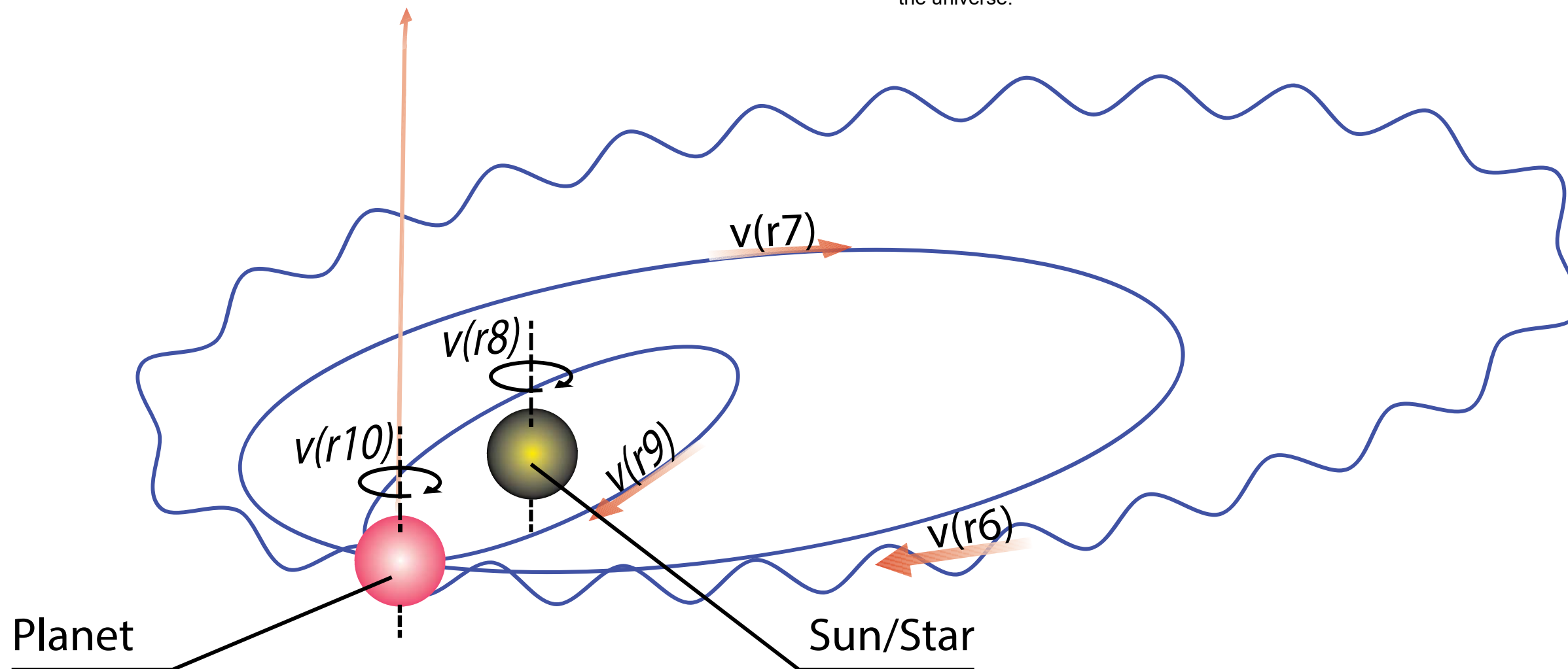
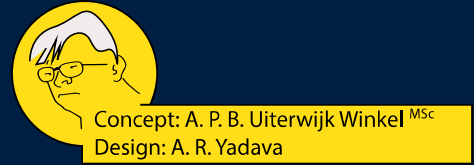







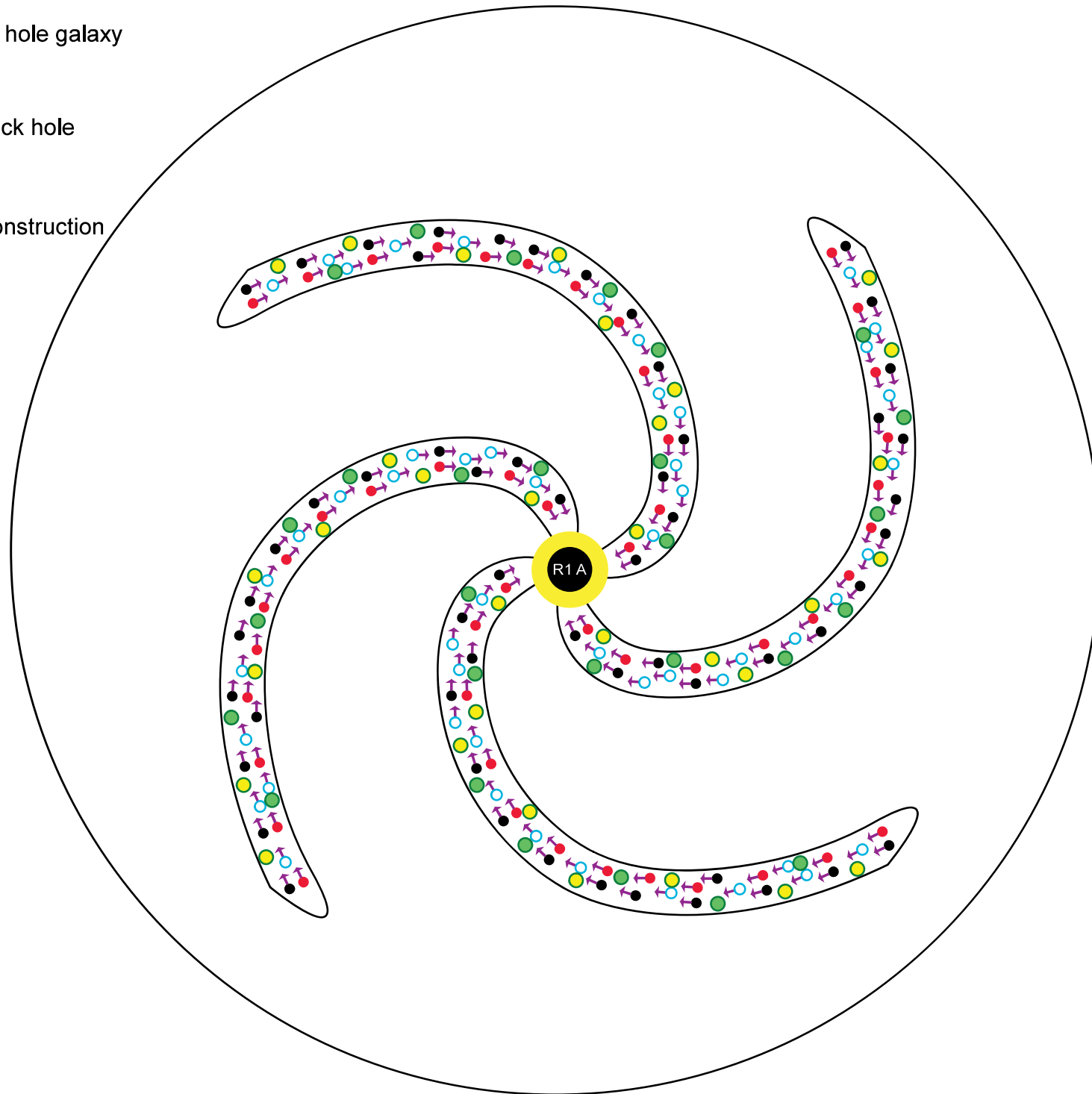


Figure 64: The expansion of the universe-spherical-shell decelerates with shrinking galaxies containing 'burned-out' stars, small black holes, red giants, white dwarfs but also the formation of new stars.



All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise








-  = area with nuclear fusion around central black hole galaxy
-  = central black hole galaxy
-  = white dwarf
-  = little local black hole
-  = red giant
-  = star under construction
-  = star + planet

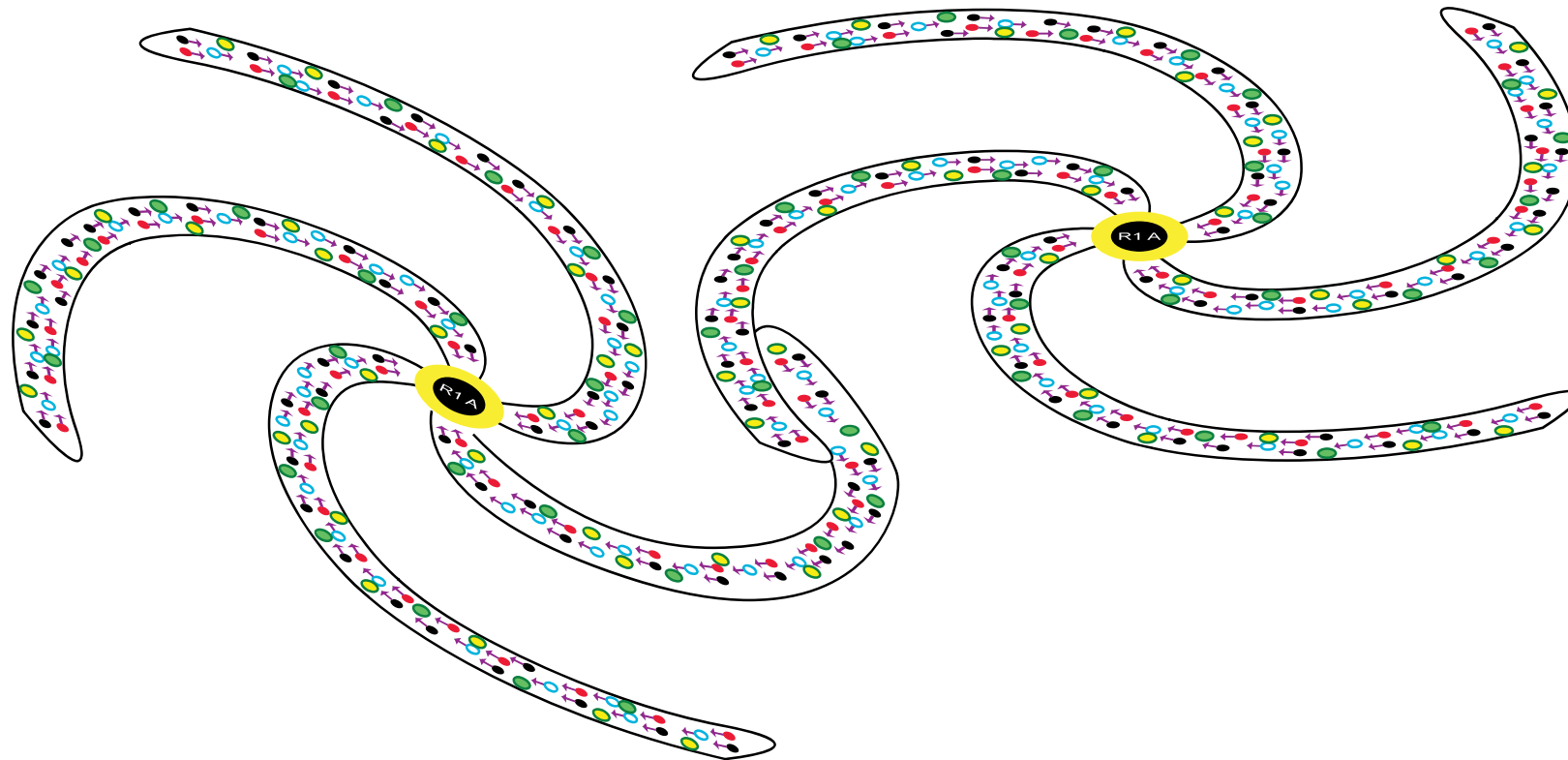


Explanation: **More than halfway through phase 23 of the cycle of the universe**

- 1) Almost all the hydrogen that was released through the Big Bangs has, in the meantime, been largely converted into elements higher than beryllium in the stars of galaxies. These elements are partly incorporated into local small black holes or white dwarfs, neutron stars or into the central black hole of the galaxy.
- 2) Depending on their size, the stars are transformed into small black holes, white dwarfs, red giants, neutron stars or other compact celestial bodies. These celestial bodies are all suitable to be incorporated into the central black hole of the galaxy.
- 3) In all galaxies, the 2 to 4 spiral arms shrink towards the central black hole **R1 A**. As they move further into the direction of the central black hole, which is approximately 2.7 kelvin, they finally disappear into this central black hole of the galaxy. In the final stage the central black hole rotates at a $\frac{1}{3}^{\text{rd}}$ to $\frac{1}{2}^{\text{th}}$ of the speed of light.
- 4) The now present 9 to 11 rotations cause the regular galaxies **R1 A** to collide with each other and thereby merge to form increasingly larger systems **R1 A**.
- 5) By these collisions between the galaxies **R1 A** the now present 9 – 11 rotation speeds disappear one by one. In the past and future there billions of collisions between galaxies. In time only remaining one *central facet black hole R1 Fa* and only one rotation speed of this *central facet black hole*.
- 6) The remainder of the hydrogen, helium and lithium around the central black hole which has not yet fused, are also fused into beryllium and higher and taken up into the super cold black hole. This fusion process masks the presence of the super-sized and super cold central black hole of 2.7 kelvin! within this superhot fusion area with temperatures of millions kelvin.
- 7) After 250 to 350 billion years the entire spiral arm and connected star-system is more or less fully integrated into its central black hole and all hydrogen, helium and lithium are fused to beryllium and higher elements.
- 8) During this period all electromagnetic radiation and particle radiation are transformed back into protons, electrons and hydrogen atoms. The hydrogen must also be transformed to atoms higher than beryllium through nuclear fusion in newly formed stars. See **Figures 63a, 63b, 63c and 63d**.

Figure 64a: Colliding of galaxies within each facet area:

-  = Nuclear fusion area around the central black hole of the galaxy
-  = central black hole galaxy
-  = white dwarf, neutron star
-  = small black hole
-  = red giant
-  = new star under construction
-  = star + planets



Explanation:

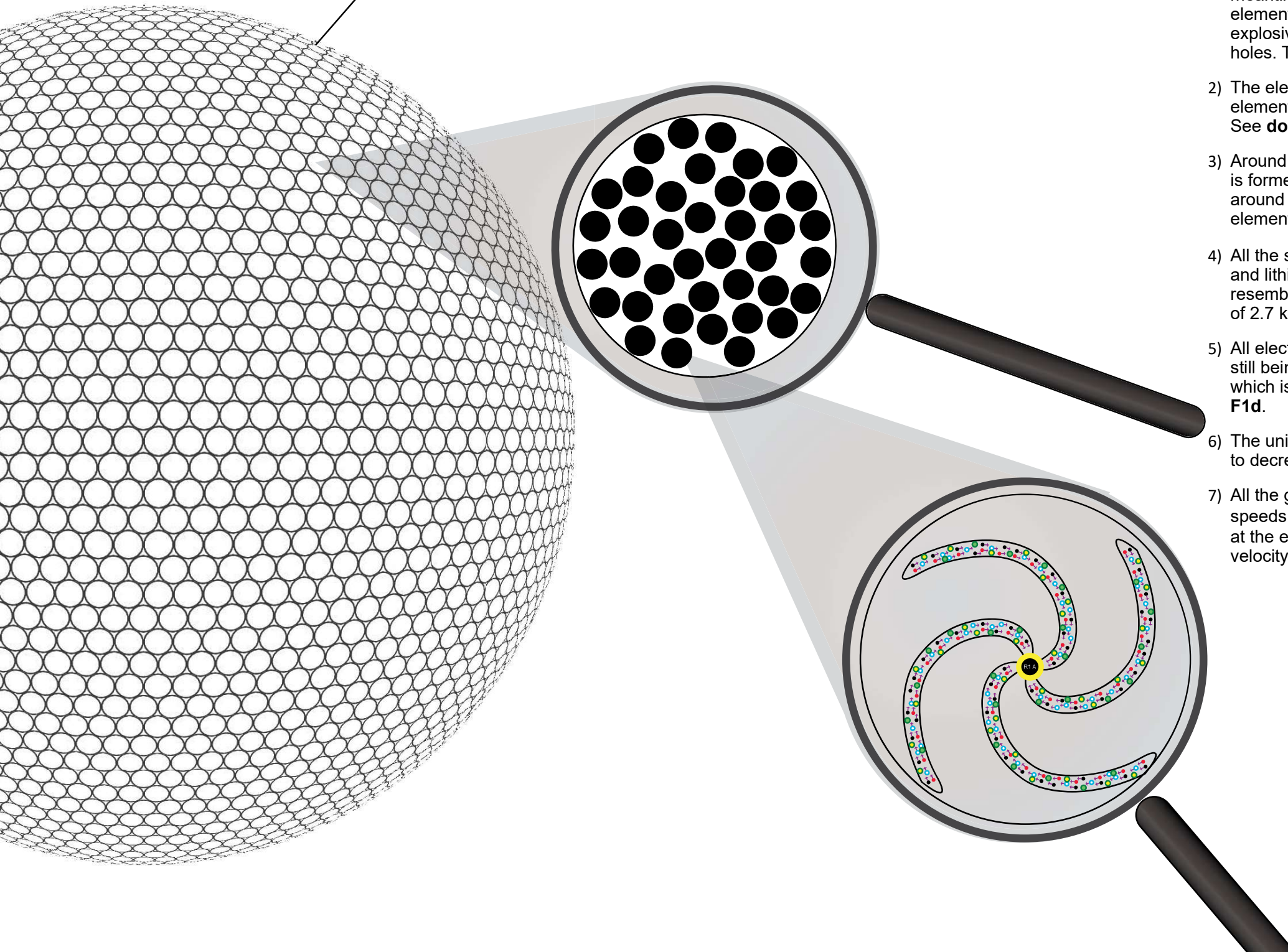
- 1) At the end of the expansion over 400 – 450 billion year in all facet areas all now present 1 – 2 thousand galaxies each with their 9 – 11 speeds are finally merged into one central facet black hole with just one angular speed.
- 2) In the past in all facet areas already hundreds of collisions local black holes occurred as LIGO measured. (LIGO doesn't measure waves of gravity but only shockwaves of gravitational energy. These shockwaves cross the universe-spherical shell though matter with the speed of light.

Gravity is exclusively generated by the 'shell' electrons of atoms and is generated by the speed of the atom in the universe. Gravity is without particles and waves. Gravity crosses and leaves the universe with infinitive speed. See **documents E3, E3-1 and E4** www.uiterwijkwinkel.eu.
- 3) At each collision between two black holes of galaxies the angular speed suddenly diminishes and so the gravity and so the connected gravitational energy. This results in a shockwave of gravitational energy that pass the universe-spherical shell with the speed of light.
- 4) At each collision at least one of the now still present 9 – 11 speeds disappear and thus this speed connected gravity and gravitational energy. Now and in the future in all facet areas thousands of collisions between galaxies will occur. In about 400 – 450 billion years this process of collision will finally result in one central facet black hole with only one angular speed.
- 5) The released energy is transferred into angular speed, gravity and gravitational energy of the remaining central black holes. All energy is finally concentrated in the central facet black hole.

Figure 65: The still expanding universe-spherical-shell with galaxies already shrinking. Galaxies contain burned-out stars; small black holes, red giants and white dwarfs.

All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise

Still expanding universe spherical shell



Explanation: **Phase 23 of the cycle of the universe**

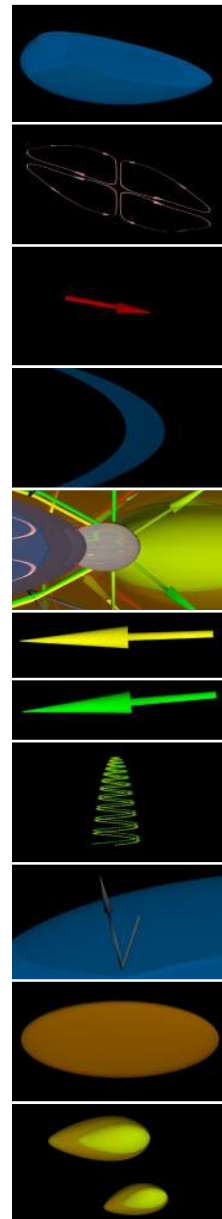
- 1) By gravity the universe-spherical-shell is continuing to expand slower and slower. In the meantime, the hydrogen in all the stars completely runs out and are converted into higher elements through nuclear fusion. At the end of their 'hydrogen phase', the stars are transformed explosively into compact celestial objects such as white dwarfs, red giants and small black holes. These compact celestial bodies are taken up into the central black hole **R1**.
- 2) The elements H, He and Li cannot be transformed into black-hole atoms because these elements have no, or just one pair of electrons. See **document F1e** www.uiterwijkwinkel.eu
- 3) Around the rotating central black hole, a co-rotating hot zone with hydrogen, helium and lithium, is formed which cannot be absorbed into the central black hole **R1 A**. In this hot (yellow) zone around the black hole, first the lightest elements fuse into the element beryllium (Be). From the element beryllium, the atoms can be absorbed into the central black hole of the galaxy.
- 4) All the super cold *central black holes* are surrounded by a layer of hot hydrogen, helium and lithium which fuse at a temperature of millions of kelvin. Therefore, the central black hole resembles a massive star. However, this hot fusion area masks the super cold central black hole of 2.7 kelvin completely.
- 5) All electromagnetic and cosmic radiation and particle matter orbiting the central black hole are still being further converted into protons and electrons and then converted to hydrogen atoms, which is also converted to beryllium and higher elements due to nuclear fusion. See **Document F1d**.
- 6) The universe becomes darker, especially in the end phase while the cosmic radiation continues to decrease in time.
- 7) All the galaxies are subjected to the expansion velocity as well the 8 - 10 forms of angular speeds.; see **Figure 41**. Finally, only the *central black holes* of each galaxy **F1 A** remain and at the end of the expansion the *central facet black hole F1 Fa*. Each has its own angular velocity.

Legend figures 65a - 65i central black holes galaxies:



Concept: A. P. B. Uiterwijk Winkel^{MSc}
Design: A. R. Yadava

All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise



Legend: figures 65a – 65i central black holes galaxies:

-) Blue core: rapidly rotating, therefore flattened, compact, super cold (2.7 kelvin) discus-shaped central black hole filled with black hole atoms \geq Be. Atoms H, H₂, He and Li and even smaller subatomic particles of atoms are not accepted!
-) Purple arrows: Extremely slow convection currents of blackhole atoms inside the central black hole galaxies due to their enormous angular velocity.
-) Red arrows; Only in the outer atomic edges of the central black hole the stabilization of atomic nuclei of black hole atoms can occur. This results in high-energy cosmic rays of protons and electrons. These are radiated directly outside the blackhole and aren't transported via both vortexes to the universe-spherical-shell. This cosmic radiation is further deflected by the present low concentrations of H₂ and He gas. That EM and cosmic radiation needs the H₂ and He as ether to move. These forms of radiation can therefore not escape from the universe-spherical-shell/ USS by passing the surrounding 100% vacuum areas!
-) The thin blue line/area marks the point with transformation ordinary matter/ atoms \geq Be \square black hole matter \geq Be. At this location, transition to black hole atoms takes place and their absorption into the black hole takes place.
-) Pink zone: rapidly rotating donut/ accretion-disk filled with superhot rejected H, H₂, He and Li plasma that is gravitationally attached to the outside and accumulates especially at the outer edge of the discus-shaped black hole. Nuclear fusion occurs under local high pressure and temperature.
-) Yellow/ green: This thin layer with H, H₂, He and Li is used for the discharge along the black hole of: a) subatomic particles nuclear fusion like photons light/ infrared and b) transport of "left-overs" ordinary matter \square black hole matter towards one of the two vortexes.
-) Vortex: rotating discharge of all, non-atomic, "left-overs" being 1) remnants of nuclear fusion H, H₂, He and Li and 2) of the transformation ordinary atoms \square black hole atoms. All with a certain amount of charge and magnetic spin but without gravitation. Inside these vortexes the accelerated transformation of EM/ cosmic rays into matter occurs: new protons, electrons and finally hydrogen. Elaborated in document F1c & figures.
-) Brown arrows: all forms of subatomic particles, photons and neutrinos from outside the black hole that are 100% reflected by the central black hole. That black hole acts like a 100% effective mirror for all forms of EM and cosmic radiation.
-) Orange Zone: That rapidly rotating pink donut extends much further than shown in figures 65a, 65e and 65f. That accretion disk is filled with superhot rejected plasma of H, H₂, He and Li, which also contains remnants of stars that have been stripped of their core by the gravitation of the black hole with higher elements Be. Those centers of stars and planets have already been directly transformed into black hole matter and incorporated into the black hole.
-) Those denucleated stars are still visible from the outside because of due to gravitation the extremely high pressure and therefore strongly accelerated nuclear fusion of H, H₂, He and Li to Be and higher. Nuclear fusion resulting in a high emission of light and infrared photons and all kinds of subatomic 'left'-overs mirrored away by the blackhole.



Oblique top view & cross-sectional structure core fast rotating centers of central black hole galaxies (CBHG) with their two vortexes and the surrounding donut of hot H, H₂, He and Li plasma:

- 1) In 2022, NASA published a photo of **Sagittarius A***; the central black hole of the Milky Way galaxy being a spiral (S) galaxy. An image of the core of the approximately a thousand times more super massive central blackhole of elliptical (E)/M galaxy **M87*** had previously been published.
- 2) These central black holes formed about 20 – 25 billion years ago during the superhot Big Bangs/ starts of the spiral (S) and of the elliptical (E)/M galaxies. Those Big Bangs are described in step 16, overall energy-neutral, cycle of the universe in 29 steps. **Document G7 & figures 42 – 54 document G8** www.uiterwijkwinkel.eu.
- 3) Both photos are composed of images collected over years from various telescopes worldwide.
- 4) The question is to what extent these eventually published images are real and to what extent these photos are the result of edits.
- 5) **Figures 65a – 65f document G8** give: a) an impression structure of the center of such central supermassive black holes in galaxies, b) what processes are at play there and c) how these pictures can be explained and interpreted. From the outside, the cores of these central black holes are almost completely hidden from view by a rather thin shell containing hot H, H₂, He and Li atoms/ plasma. **Figure 65a, 65b and 65d.**
- 6) Reflecting light makes the black hole itself somewhat visible as a dark disk. **Figure 65d.** Because of the surrounding layer of gas/plasma of H, H₂, He and Li, the black hole itself cannot be clearly seen from the outside.
- 7) Central black holes of galaxies are:
 - a) Super-fast rotating disc-shaped massive celestial bodies with a radius of hundreds – many thousands of km that are filled with black hole atoms \geq Be. Formed about 20 – 25 billion years ago during the Big Bangs and the start of the galaxies. They are by far the first and therefore also the oldest black holes in the universe.
 - b) Filled with ordinary atoms \geq Be of which the electron shells collapsed under high pressure and through the formation of van der Waals/ London bonds until very close to their atomic nucleus. This collapsing electron shells/ clouds requires at least two electron-pairs and is only possible from the element beryllium/ Be. **Document F1e & figures.** Such collapsed black hole atoms in fact only generate an amount of gravitation and have a temperature of just about 2.7 kelvins. That collapse of electron shells is not possible with the atoms H, H₂, He and Li. Those atoms generate gravity but cannot collapse and therefore aren't accepted by black holes as well as all smaller subatomic particles/ EM and cosmic radiation.
 - c) Due gravity these rapidly rotating central black holes are surrounded by a co-rotating, layer/ donut filled with hot plasma of Li, He, H₂ and H gases/ plasma. **Figure 65a.** Due to gravitation and rotation, those plasmas of H, H₂, He and Li are attached to the outer edge and outer side of the central black hole in the shape of a flattened donut.
 - d) Two rapidly rotating vortexes (**figure 65c**) are perpendicular to the plane of the black hole around the axis of rotation of the galaxy. Via these 2 vortexes, all unacceptable “left-overs” without gravity are discharged outside the black hole. “Left-overs” are: 1) various subatomic cosmic particles, 2) individual protons, 3) individual electrons, 4) quarks, 5) photons and 6) neutrinos.
 - e) These particles/ electromagnetic EM radiation & cosmic rays are discharged as yellow/ green arrows via the interface of the black hole and the Li, He, H₂ and H present around as rouge zones towards both rapidly rotating vortexes. Those vortexes aren't always visible.
 - f) Within both vortexes, these unaccepted rotating subatomic particles are reconstructed back into protons, electrons, hydrogen and eventually new stars. That reconstruction of protons/ electrons is elaborated in **document F1c & figures.**
- 8) The cores of central black hole galaxies are rapidly rotating (with tens of % light speed c) and super cold celestial bodies (about 2.7 kelvin) with a radius of hundreds to many thousands of km that are filled with black hole atoms \geq Be.
- 9) Due to differences in history, these central black holes of spiral (S) galaxies generate millions of times the gravity of our sun while the gravity generated by elliptical (E)/M galaxies is about a thousand times larger/ heavier. The central blackholes (E)/M galaxies thus all sided about a factor ten times bigger. Due that enormous concentrated gravitation these (E)/M galaxies are much more compact relative spiral (S) galaxies.



- 10) Physically, such super cold (2.7 kelvin) black holes cannot possibly evaporate. Stephen Hawking argued that based on mathematical grounds without providing a physical explanation for the driving force behind the evaporation of black holes and restrictions by gravitation!
- 11) Due to their gigantic high rotational/angular velocity, all black holes have the shape of a strongly flattened discus. These central black holes of galaxies generate an enormous amount of rotational gravitation of many millions – billions of times the gravitational attraction of our sun. They generate much more (rotational) gravitation than Einstein predicted in the theory of relativity.
- 12) According to Einstein's gravitational formulas, in spiral (S) galaxies approximately 3 – 4 times less gravitation is generated than is needed to keep these (S) galaxy together. In Science 2022, that currently missing gravitation is referred to as 'dark' matter while there is a presence of rotational gravitation! Unfortunately, Einstein gave no physical explanation for gravitation.
- 13) **Documents E3, E3-1 and E3-2** www.uiterwijkwinkel.eu explain the physical origin as well speed of atoms related structure of gravitation. Gravitation is generated by the shell electrons of atoms due to the atom's velocity in the universe. Due the 9 – 11 speeds there is much more gravitation in the universe Einstein indicated. Loose protons, electrons do have mass as well are matter, but single protons and electrons do not generate gravitation by themselves!
- 14) Those even smaller subatomic particles don't generate gravitation either.
- 15) Because of their enormous angular velocity, those central black holes of spiral (S) galaxies and the atoms present there generate about 3 – 4 times more gravitation physically than Einstein indicates on mathematical grounds in the theory of relativity. That much higher rotational gravitation of physical origin holds the galaxy together.
- 16) Under high external pressure and through internal formation of Vander Waals/ London bonds between electron pairs, the electron shells of ordinary atoms \geq Be can collapse to close to their atomic nucleus. Spatially, those ordinary atoms \geq Be shrivel almost completely during this transformation into black hole atoms. The atomic structure remains intact and with it the generation of the same components of gravitation.
- 17) (Black hole atoms electrically repel each other. As a result, black holes cannot physically collapse further into a singularity! Singularities physically aren't possible; mathematically they are possible!
- 18) Such black hole atoms repel each other as in a gas. At least an amount about 8x the gravity of our sun is needed to keep those repelling black hole atoms trapped/ jailed inside the black hole. So black holes are essentially very vulnerable and unstable. Blackholes explode crossing this Critical blackhole gravitation (Cribhgra) about 8x the gravitation of our sun. When they explode, these black holes and black hole atoms disintegrate into an equivalent number of individual protons and electrons. (The Crab Nebula & start universe)
- 19) The atomic nuclei of such collapsed black hole atoms hardly have any space left to vibrate/ vibration. All black hole atoms/black holes are therefore super cold by default with a temperature of only about 2.7 kelvin. That temperature roughly corresponds to the background temperature / CMB temperature of the universe and prevents any form of evaporation.
- 20) Black holes only accept such collapsed ordinary atoms \geq Be and therefore only black hole atoms from Be and higher. All other forms with mass, matter, energy and radiation are not accepted.
- 21) Ad b) The electron shells atoms H, H₂, He and Li cannot collapse and transform into black hole atoms. The atoms H, H₂, He and Li are therefore not suitable/acceptable for inclusion in a black hole.
- 22) Due to their enormous rotational speed and therefore great gravitation, the rejected H, H₂, He and Li stick to the black hole and accumulate as hot plasma in flattened donut-shaped structures around the edges of the discus-shaped black hole as shown in the **figures 65e and 65f**.
That hot H, H₂, He and Li plasma accumulates in the accretion disk around the super cold (about 2.7 kelvin) black hole and specifically around the edges of the central black hole.



- 23) Gravitation creates a rapidly rotating superhot plasma-shaped donut of H, H₂, He and Li containing nuclear fusion to Be or higher acceptable for the blackhole.
- 24) Ad c) The “left”-overs. That transformation and the collapse of: 1) ordinary atoms \geq Be into black hole atoms \geq Be and 2) the nuclear fusion of H, He and Li to Be and higher results in all kinds of remnants / subatomic “left-overs”. They particles aren’t also acceptable for inclusion in the central black hole. Those “left-overs” consist of individual protons, individual electrons, photons, neutrinos, quarks and all kinds of subatomic particles.
- 25) Due to the absence of gravity, these “left-overs” are also not bound to the black hole. They are deflected via the H, H₂, He and Li plasmas surrounding the black hole and diverted to both rapidly rotating vortexes present on either side of the black hole and thus discharged outside the galaxy’s black hole. **Figure 65d.**
- 26) Within both rapidly rotating vortexes a strongly accelerated reconstruction occurs of photons and neutrinos into protons & electrons and finally into hydrogen. Elaborated in **document F1c & figures**. This result in small parallel galaxies/ clouds of stars.
- 27) From the start/ Big Bang of the galaxy, about 20 – 25 billion ago, that central black hole has been filled with black hole atoms with extremely unstable atomic nuclei. These nuclei can only stabilize if: a) these black hole atoms end up via convection currents (purple arrows) in the very outermost atomic layers of the black hole and b) that particle radiation emitted during stabilization contains an extremely high amount of energy (approximately 10^{20-22} GeV). See red arrows **figures 65d, 65e and 65f**. This stabilization is an important source of high-energy cosmic rays in the universe.
- 28) Given the gigantic compactness of the black hole matter and slow flows inside black holes, this stabilization of black hole atoms is an extremely slow process.
- 29) This stabilization must be/ have been fully completed during the next 350 - 450 billion years of phase/ step 23 of 29 of the universe cycle. **Document G7.**
- 30) A lot is happening around the centers of those central black holes galaxies. Fortunately, everything can be explained strictly logically, predictably and thus presented by mathematically modelling followed by quantification.

Figure 65a: View oblique central area central black holes galaxies.



Concept: A. P. B. Uiterwijk Winkel MSc
Design: A. R. Yadava

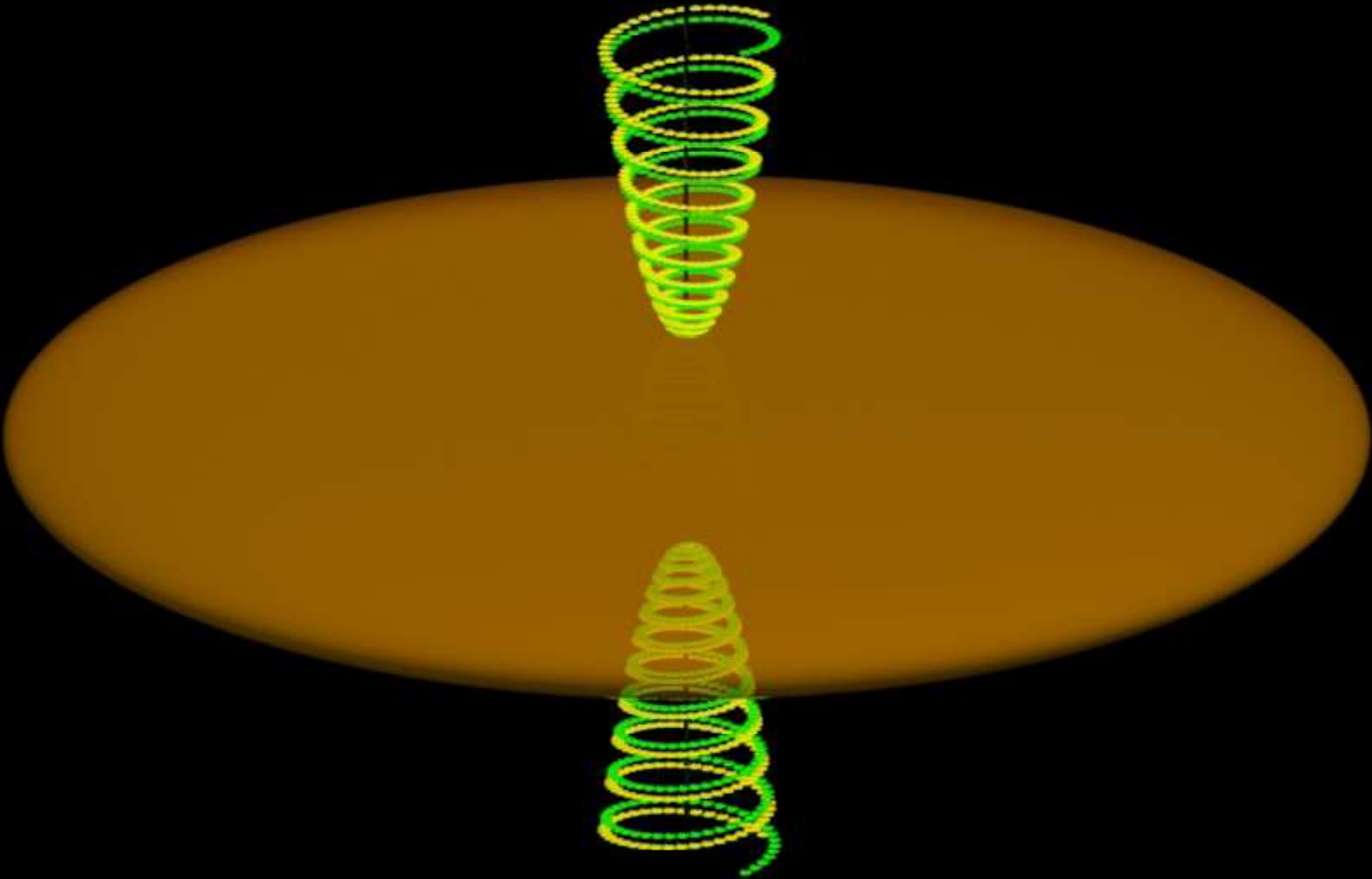


Figure 65b: Sideview central area central black holes galaxies.



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Design: A. R. Yadava

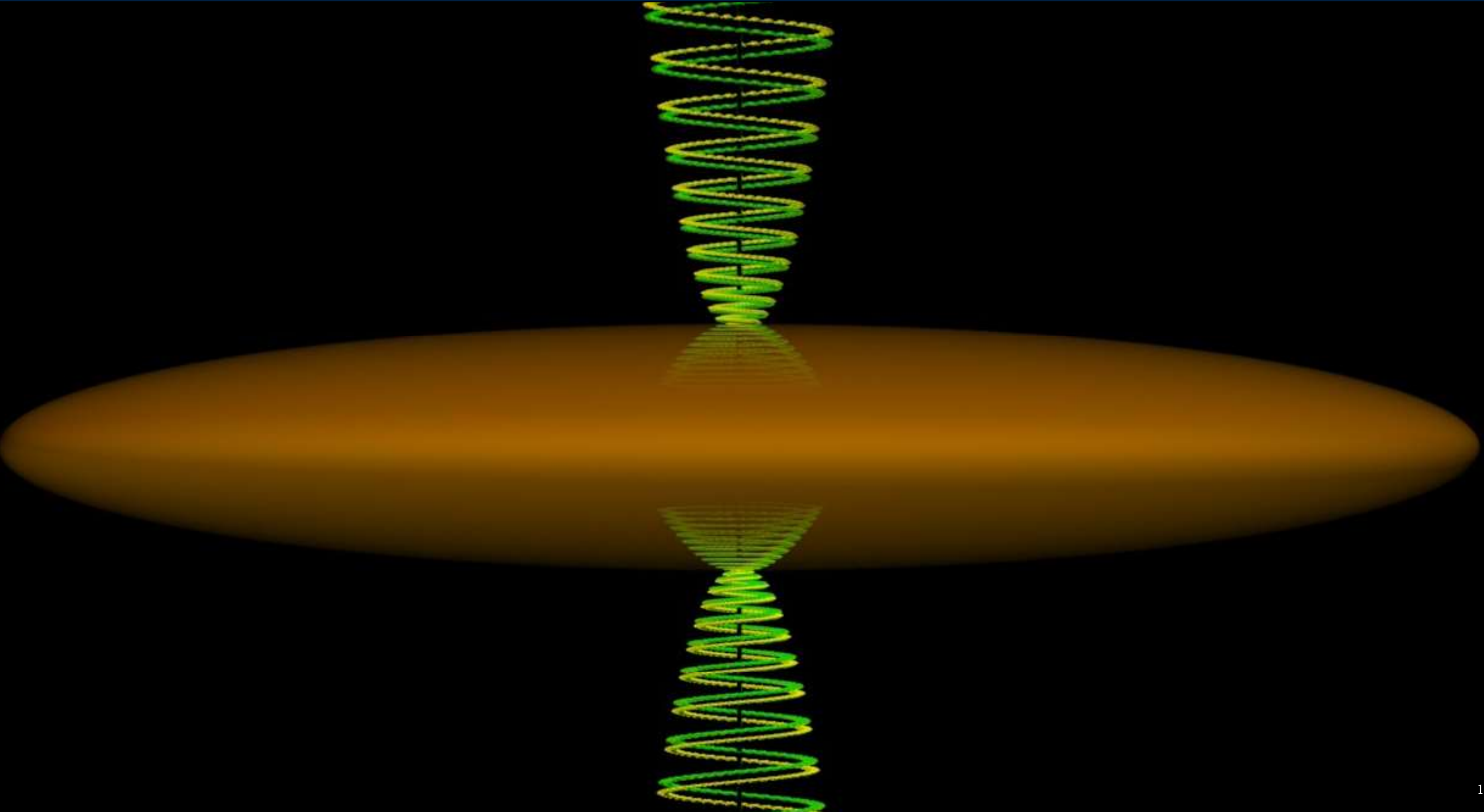


Figure 65c: Two vortexes central black holes galaxies.

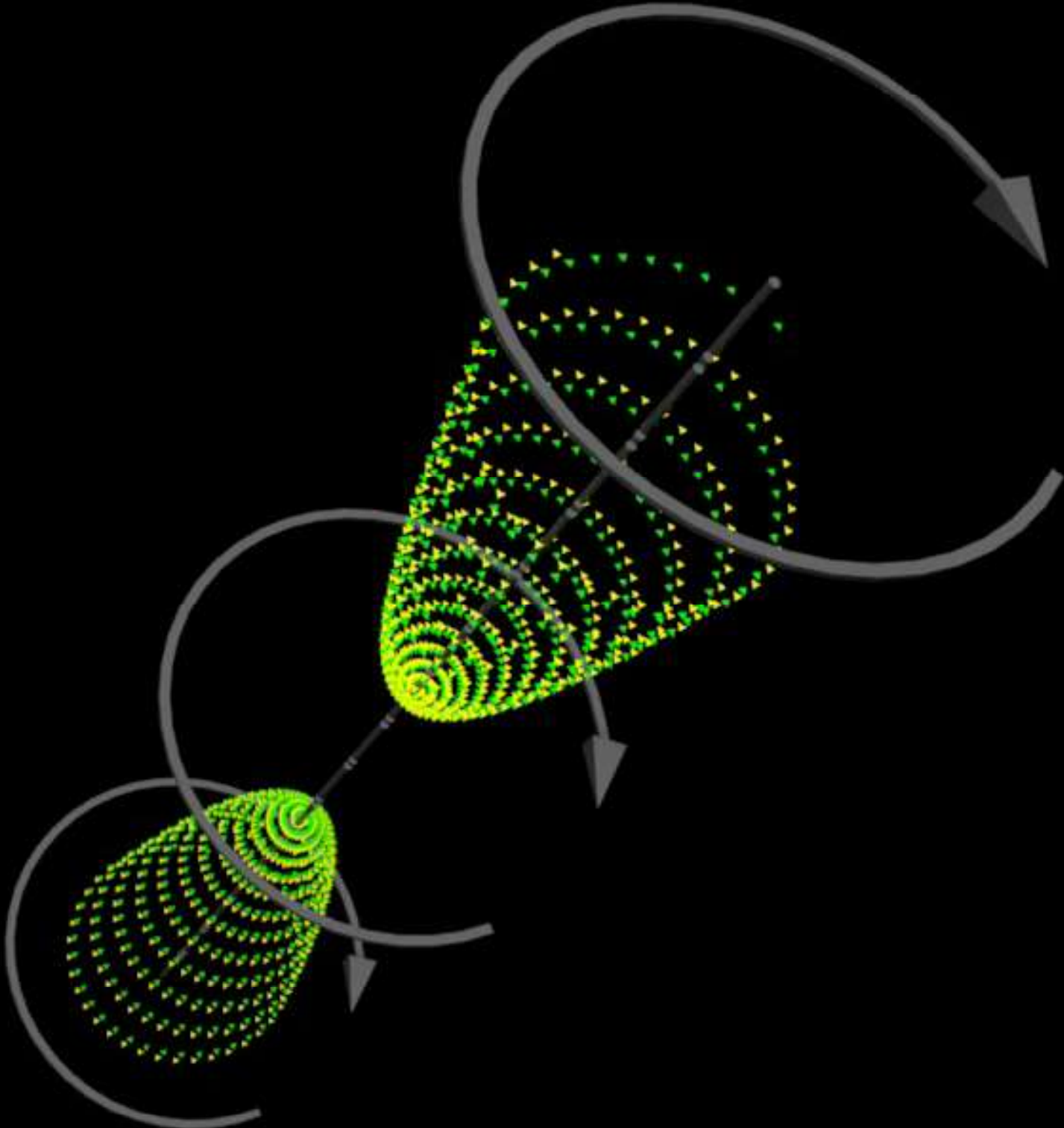



Figure 65d: Central black holes galaxies and high energetic cosmic radiation.

 Concept: A. P. B. Uiterwijk Winkel ^{MSc}
Design: A. R. Yadava

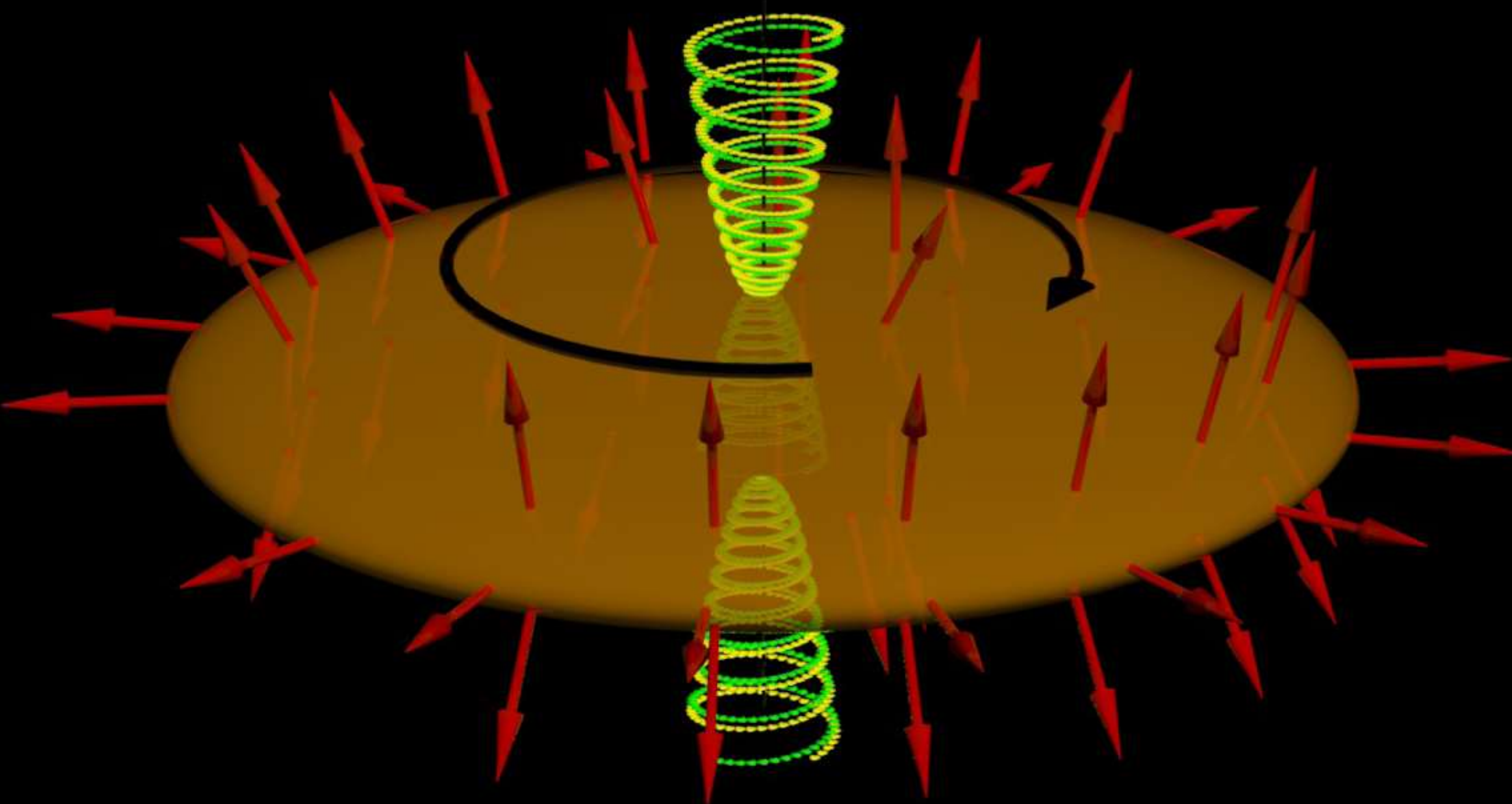



Figure 65e: Cross section centers of central black holes galaxies.

 Concept: A. P. B. Uiterwijk Winkel ^{MSc}
Design: A. R. Yadava

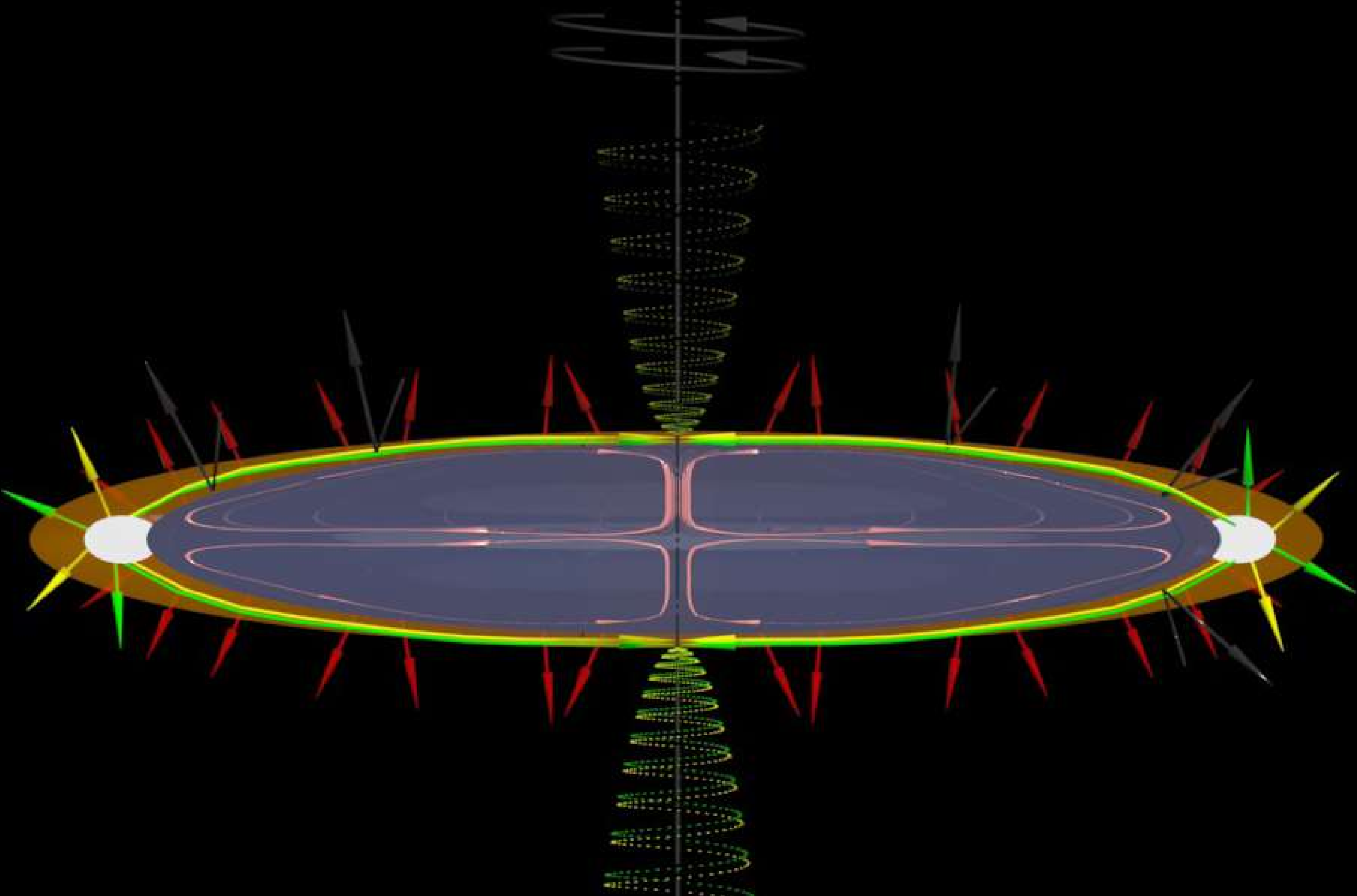

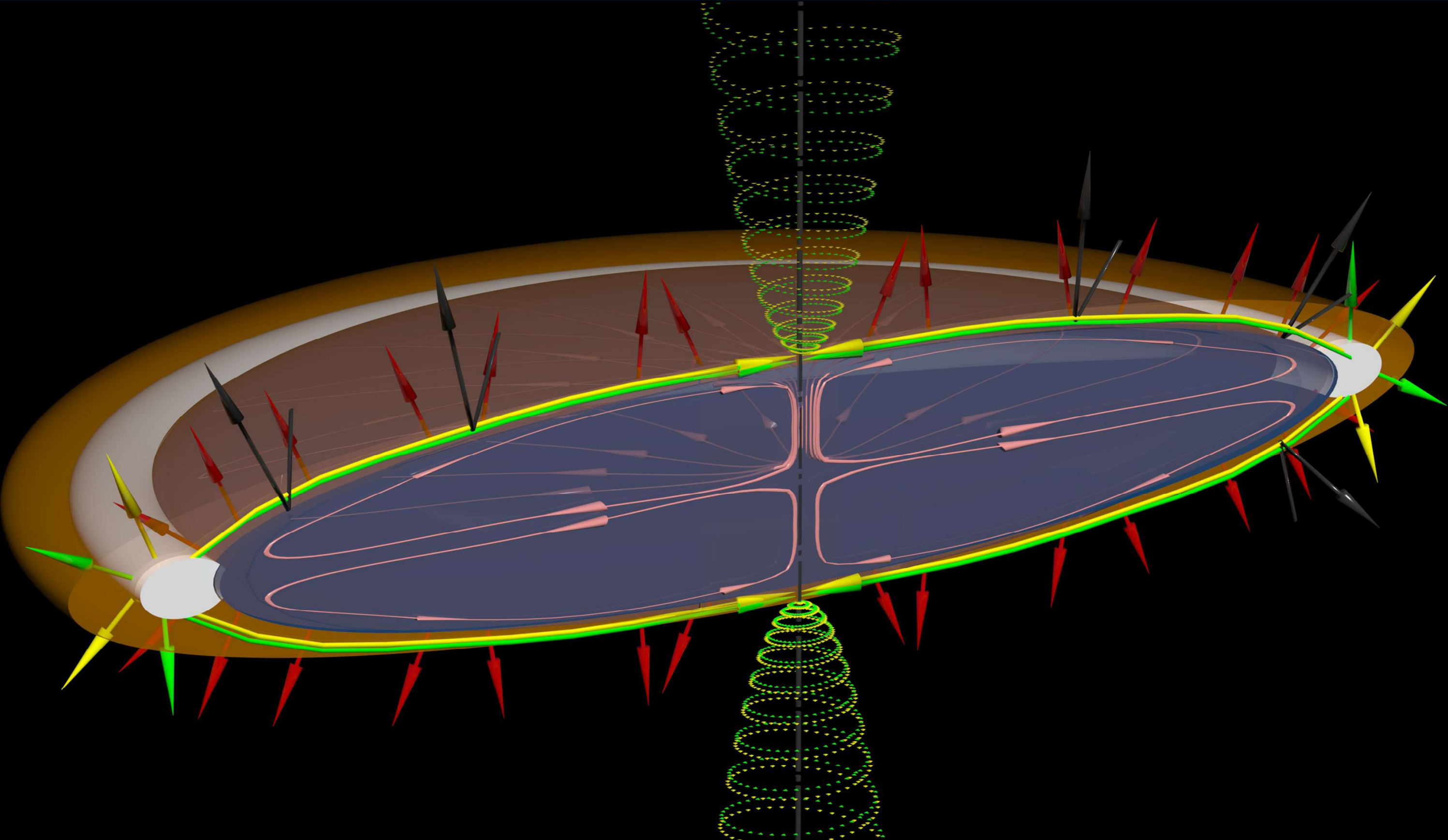


Figure 65f: Oblique view centers central black holes galaxies:


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Design: A. R. Yadava

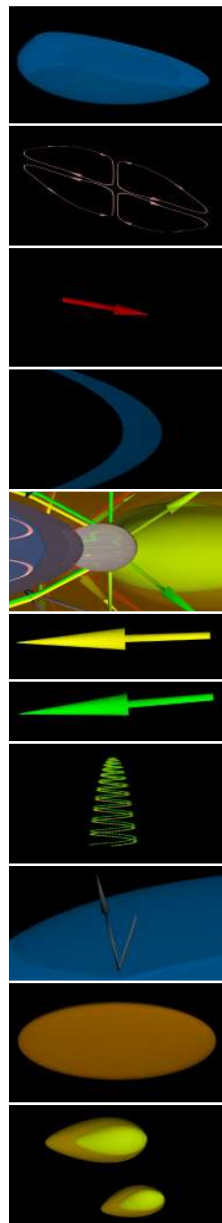


Legend figures 65a - 65i central black holes galaxies:



Concept: A. P. B. Uiterwijk Winkel^{MSc}
Design: A. R. Yadava

All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise



-) Blue core: rapidly rotating, therefore flattened, compact, super cold (2.7 kelvin) discus-shaped central black hole filled with black hole atoms \geq Be. Atoms H, H₂, He and Li and even smaller subatomic particles of atoms are not accepted!
-) Purple arrows: Extremely slow convection currents of blackhole atoms inside the central black hole galaxies due to their enormous angular velocity.
-) Red arrows; Only in the outer atomic edges of the central black hole the stabilization of atomic nuclei of black hole atoms can occur. This results in high-energy cosmic rays of protons and electrons. These are radiated directly outside the blackhole and aren't transported via both vortexes to the universe-spherical-shell. This cosmic radiation is further deflected by the present low concentrations of H₂ and He gas. That EM and cosmic radiation needs the H₂ and He as ether to move. These forms of radiation can therefore not escape from the universe-spherical-shell/ USS by passing the surrounding 100% vacuum areas!
-) The thin blue line/area marks the point with transformation ordinary matter/ atoms \geq Be \square black hole matter \geq Be. At this location, transition to black hole atoms takes place and their absorption into the black hole takes place.
-) Pink zone: rapidly rotating donut/ accretion-disk filled with superhot rejected H, H₂, He and Li plasma that is gravitationally attached to the outside and accumulates especially at the outer edge of the discus-shaped black hole. Nuclear fusion occurs under local high pressure and temperature.
-) Yellow/ green: This thin layer with H, H₂, He and Li is used for the discharge along the black hole of: a) subatomic particles nuclear fusion like photons light/ infrared and b) transport of "left-overs" ordinary matter \square black hole matter towards one of the two vortexes.
-) Vortex: rotating discharge of all, non-atomic, "left-overs" being 1) remnants of nuclear fusion H, H₂, He and Li and 2) of the transformation ordinary atoms \square black hole atoms. All with a certain amount of charge and magnetic spin but without gravitation. Inside these vortexes the accelerated transformation of EM/ cosmic rays into matter occurs: new protons, electrons and finally hydrogen. Elaborated in document F1c & figures.
-) Brown arrows: all forms of subatomic particles, photons and neutrinos from outside the black hole that are 100% reflected by the central black hole. That black hole acts like a 100% effective mirror for all forms of EM and cosmic radiation.
-) Orange Zone: That rapidly rotating pink donut extends much further than shown in figures 65a, 65e and 65f. That accretion disk is filled with superhot rejected plasma of H, H₂, He and Li, which also contains remnants of stars that have been stripped of their core by the gravitation of the black hole with higher elements Be. Those centers of stars and planets have already been directly transformed into black hole matter and incorporated into the black hole.
-) Those denucleated stars are still visible from the outside because of due to gravitation the extremely high pressure and therefore strongly accelerated nuclear fusion of H, H₂, He and Li to Be and higher. Nuclear fusion resulting in a high emission of light and infrared photons and all kinds of subatomic "left"-overs mirrored away by the blackhole.

Figures 65g – 65i: Structure accretion disk around central supermassive black holes galaxies (CBHG):




Concept: A. P. B. Uiterwijk Winkel^{MSc}
Design: A. R. Yadava

- 1) Through their gigantic (rotational) gravity, the central black holes of galaxies continuously trap stars with their companion planets. Within the next 350 - 450 billion years, the entire galaxy with its many billions of stars, planets and small local black holes and parallel smaller galaxies will eventually be completely engulfed by this central black hole.
- 2) In the universe now about 4 – 20 million more or less identical clusters are present. Each cluster of galaxies containing about 4 – 6 thousand or more galaxies. In these clusters, through gravitation, all present spiral (S) and elliptical (E)/M galaxies collide with each other until only one large central black hole cluster (CCZG) remains with a radius about 20 – 30 thousand km may be more.
- 3) That moment the expansion of the universe/ universe-spherical-shell/ USS ends as well as a perfectly round formation/ balloon of these 4 – 20 million almost identical CCZG's is completed. That's the end of step 23 and step 24 in the cycle of the universe of 29 steps. **Document G7.**
- 4) When stars arrive in the direct vicinity of the central black hole, the enormous gravitation sucks the active hot core out of the star containing higher elements \geq Be in plasma state. This process goes hand in hand with the engulfing of the companion planets. Those planets are already almost completely suitable for transformation \rightarrow black hole matter and inclusion in the black hole.
- 5) In fact, the trapped star only remains as a sphere of hot H, H₂, He and Li plasma with remnants of the elements \geq Be. These higher elements will act as catalysts in the nuclear fusion process that continues under high pressure and temperature. These more or less pear-shaped remnants of stars remain visible for a long time from the outside and visible in both photos Sagittarius A* and M87*. **Figures 65g, 65h and 65i.**
- 6) Within the invisible part of the central black hole is mainly the hot plasma state lithium. Because of its greater gravitation, lithium is mainly attached to the outside of the central black hole. The residual gases H, H₂ and He are present as plasmas in the accretion disk of the central black hole and partly displaced by the greater gravitational force of the Li.
- 7) In case such a central black hole captures a star from the galaxy, the gigantic gravity of that central black hole sucks the core with elements \geq Be from this star and transforms the superhot plasma atoms \geq Be present there into super cold black hole atoms.
- 8) Those cores of stars contain about 95% or more of all the higher atoms present in the entire solar system. The same goes for our sun.
- 9) After removing the stars-center, a hot gas sphere/ star remains with nuclear fusion that mainly consists of H, H₂, He and Li plasma. That nuclear fusion step to Be and higher is necessary to make these light atoms acceptable for inclusion in the central black hole.
- 10) Those rotating and oblate stars disintegrate as well via streams of hot plasma and are added to the already present hot H, H₂, He and Li donut.
- 11) In that donut nuclear fusion occurs of H, H₂, He and Li into Be and higher, which in the interface directly transforms into black hole atoms. These fusion products are added to the central black hole. These “left-overs” of a) nuclear fusion in remains of stars & donut and b) transformation normal atoms \rightarrow black hole atoms are discharged to both vortexes and transported away outside the blackhole.
- 12) In both vortexes, those “left-overs” are reversed over a period of thousands to millions of years and transformed into new protons, electrons and finally hydrogen. **Documents F1b and F1c & figures.** That rapidly rotating donut structure containing star remnants is clearly visible as brightly lit globular locations in both images of M87* and Sagittarius A*.
- 13) The locally present enormous gravitation compresses the remnants of these trapped hot plasma-shaped stars (without a core) resulting in a strongly accelerated nuclear fusion and increased production of neutrinos and photons of light and infrared (**F1b & figures**).
- 14) Those photons, neutrinos are also not accepted by the black hole. That radiation is 100% reflected by the black hole or discharged to one of the two vortexes on either side of the black hole.

- 15) Remnants of the original cores of the star with higher elements Be act as catalyst and neutron (proton/electron) donor that make this accelerated nuclear fusion possible. This stepwise formation of higher atoms in the periodic table is described in **document F1d & figures**.
- 16) By nuclear fusion these “de-nucleated” stars are completely transformed into Be and higher. It probably takes tens to hundreds of years before these plasma remnants of stars: a) are completely transformed into Be and absorbed by the central black hole and b) flattened out and spread over the accretion disk and fused to Be as well. Such trapped stars remain visible for a long time. **Figures 65g, 65h and 65i**.
- 17) Over time, these super cold (2.7 kelvin) black holes only grow in size, gravitation and weight. Given their extremely low temperatures, none of these black holes evaporate. Contrary to what **Hawking and Penrose** posit and thought on mathematical grounds.
- 18) Both vortexes extend for distances of tens, hundreds and possibly even thousands of light years away from the black hole. During a period of many millions/ possibly billions of years of rotation within both vortexes, all subatomic particles, photons and neutrinos are fully reconstructed and rebuilt into ordinary protons, electrons and hydrogen. At least within 13.8 billion years at the latest. Due to rotation probably within a much shorter period. **Document F1c & figures**.
- 19) After cooling that hydrogen to approximately 20 Kelvin, that gas becomes a liquid and now hydrogen loses its gas pressure and entropy. Gravitation then causes the formation of huge H₂ spheres of liquid, almost pure, hydrogen. Those hydrogen spheres get bigger and hotter over time and lead to the formation of new stars in parallel clouds of stars.
- 20) Those new stars are formed in groups of stars as well small parallel galaxies located only a few thousand light years from the plane of the original galaxy.
- 21) Ultimately, this results in the formation of several smaller parallel galaxies that initially start without the presence of a super massive central black hole. Due to rotation, gravitation and mutual collisions, such small systems will eventually form small central black holes.
- 22) In those parallel galaxies, those originally emitted photons and neutrinos are ultimately via a long path reconstructed into protons/ electrons, hydrogen, nuclear fusion in stars back into the element beryllium/Be and higher
- 23) This way all radiation in the universe are made suitable for a) adding in the local already present or coming small black holes of these small parallel galaxies or b) adding in the central black hole of the galaxy itself.
- 24) In the next 350 – 450 billion years in all clusters, under the influence of gravity, all present four to six thousand or more galaxies and smaller parallel galaxies and radiation will eventually merge into one gigantic central cluster black hole / CCBH via mutual collisions.
- 25) That moment the entire universe / a perfectly round, universe-sphere-shell is reduced into a perfectly round/ curved, cold and dark sphere of approximately 4 – 20 million presumably more or less identical central cluster black holes/ CCBH's with a radius of currently estimated 10 – 12 billion light years; possibly even more.
- 26) That moment all expansion velocity is converted into rotational velocity/energy of these CCBH's and concentrated therein as well. (law conservation energy)
- 27) At the end of phase 23, about 350 – 450 billion years from now, the universe/ universe-sphere-shell will therefore also be stripped of all forms of EM radiation and of all forms of cosmic particle radiation. The universe is then absolutely dark and cold with a temperature $\ll 2.7$ Kelvin.
- 28) Then gravitation these CCBH's ensures that all mass, matter and energy returns coordinated towards center C universe for the start of the next, exactly the same, overall energy-neutral cycle of the universe in 29 steps.
- 29) The universe is a 100% closed system for mass, matter and energy in the form of a universe-spherical-shell. This universe and its overall energy-neutral cycle of 29 steps can be modelled mathematically. Using this model, the universe can be quantified completely and in great detail. **Document G15 (Eng 105 pages)** www.uitervijkwinkel.eu .

Figure 65g: Oblique central black hole galaxies with accretion disk:

 Concept: A. P. B. Uiterwijk Winkel ^{MSc}
Design: A. R. Yadava

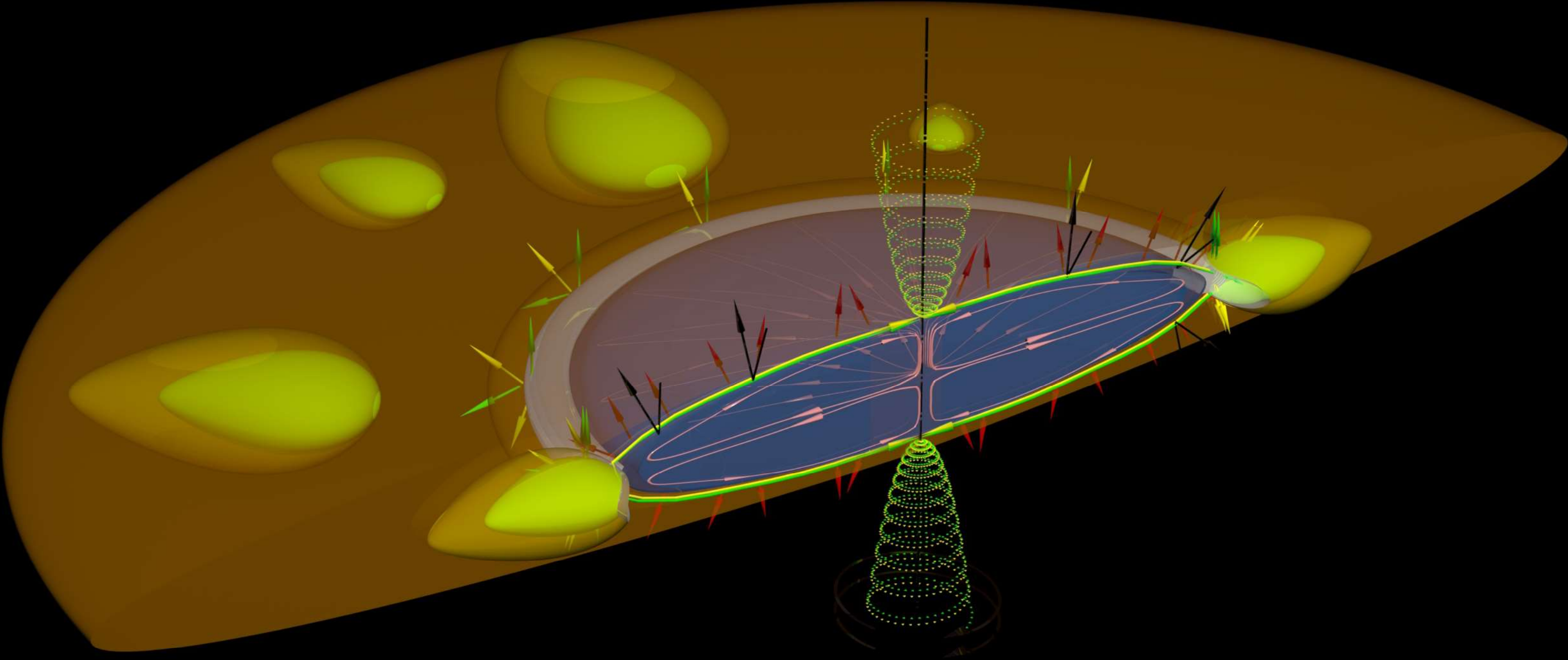


Figure 65h: Cross section central black holes galaxies and accretion disk.

Concept: A. P. B. Uiterwijk Winkel ^{MSc}
Design: A. R. Yadava

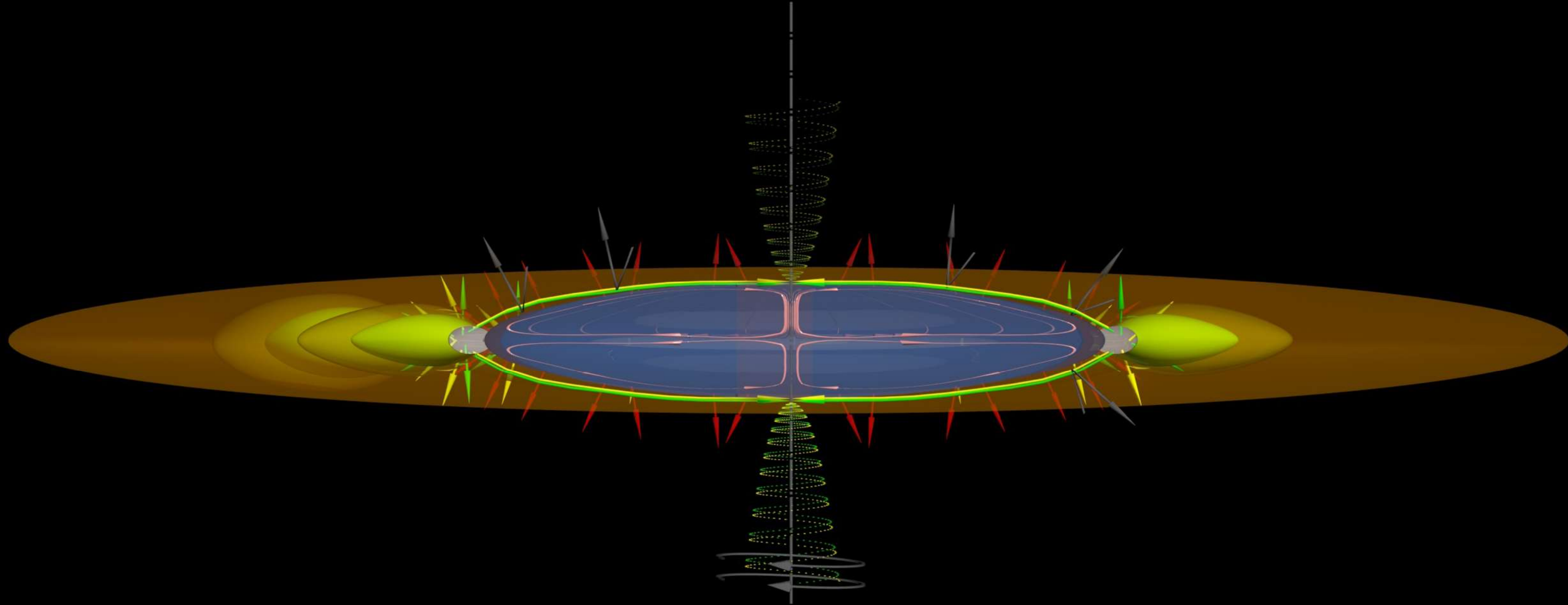
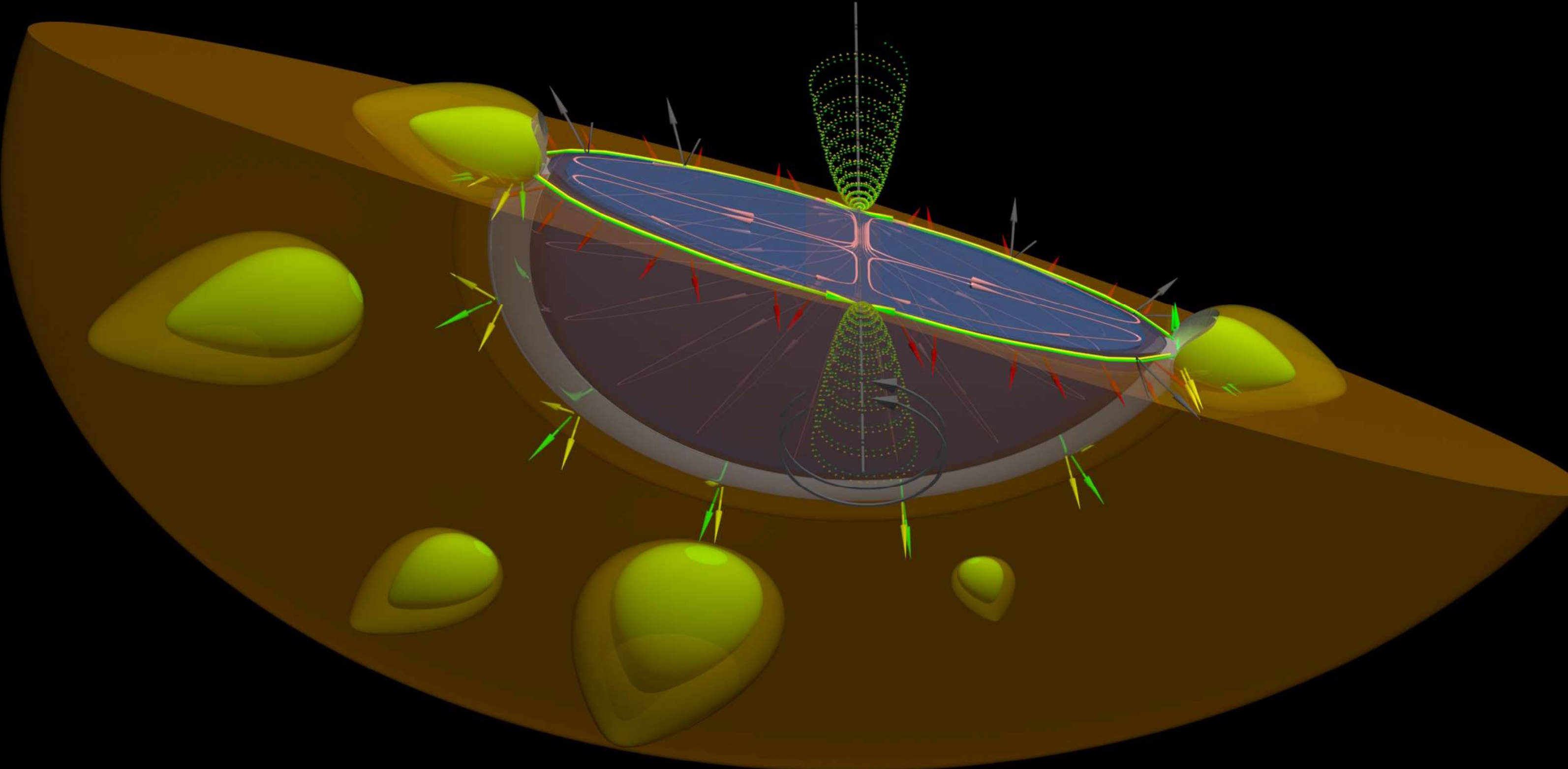


Figure 65i: Bottomview central black holes galaxies and accretion disk.



Concept: A. P. B. Uiterwijk Winkel MSc
Design: A. R. Yadava



Explanation figures 65j, 65k, 65l and 65m document G8:

Structure and processes in: a) blackholes, b) in the accretion disk, c) in the vortices of central supermassive black hole galaxies (CZGS), d) formation of new hydrogen and stars:

- 1) Due to their gigantic gravitational force in combination with an enormous rotational speed, central black holes of galaxies (CBHG) have the shape of a highly flattened extremely massive disc. Because of this enormous rotational speed, these central black holes filled with compact black hole atoms present in them physically generate much more rotational gravitation Einstein indicated for gravitation on purely mathematical grounds. That physically generated rotation gravitation is dark energy.
- 2) The relatively much smaller central black holes of spiral (S) galaxies generate an amount of gravity equivalent to millions of times the gravitation of our sun. The approximately one thousand times larger massive central black holes of elliptical (E)/M galaxies generate an amount of gravitation equivalent billions of times the gravity of our Sun. Those elliptically galaxies therefore are much more compact. (Both types of galaxies are made up of roughly the same amount of matter/hydrogen. **Steps 10 – 15 universe cycle document G7** www.uiterwijkwinkel.eu).
- 3) Under the gigantic high pressure due to gravity and temperature, only the electron shells of atoms \geq Be can collapse to close towards close their atomic nucleus. Ordinary atoms transform into collapsed black hole atoms. This collapsing of electron shells is only possible at atoms with at least two electron pairs. So collapsing is just possible starting Be. These central black hole galaxies are filled with black hole atoms Be and higher. **Document F1e & figures.**
- 4) That collapse of atoms and inclusion in a black hole is not possible with the atoms H, H₂, He and Li. Therefore these elements are refused as well rejected. The same is true for all subatomic particles in EM radiation and present in cosmic particle radiation!
- 5) Due their gravitation these rejected elements H, H₂, He and Li are rigidly attached around the blackhole as a thin layer of atoms. **Figure 65j G8.** Nuclear fusion of H, H₂, He and Li to Be and higher takes place in the light purple band. Such fused atoms Be and higher immediately collapse into black hole atoms which are immediately absorbed by the black hole.
- 6) All forms of subatomic electromagnetic (EM) radiation as well all cosmic particle radiation are 100% rejected as well. These forms of EM and cosmic radiation do not generate gravitation by themselves and thus aren't attached by the gravity of the black hole. These EM/ cosmic particles remain largely trapped within that thin, due gravity extremely dense surrounding layer/ ether of H, H₂, He and Li and diverted via that thin layer to one of the two vortexes present on either side the blackhole.
- 7) At the tip of this disc/ the central black hole by gravitation a zone is attached containing hot plasma of H, H₂, He and Li, rejected by the black hole.
- 8) Under high pressure and temperature, nuclear fusion of H, H₂, He and Li takes place in that zone/ band to element Be and higher, which immediately transform into black hole atoms and are absorbed by the central black holes of (S) and of (E)/M galaxies. **Figure 65k.**

- 9) During the nuclear fusion of H, H₂, He and Li to Be and higher, all kinds of subatomic particles are released, such as neutrinos, photons, quarks, which as residual products/ waste of the nuclear fusion-process. These subatomic particles also pass through this thin, extreme dense, layer/ether of H, H₂, He and Li surrounding the black hole resulting in an almost absolute vacuum impenetrable for EM and cosmic radiation. Via this surrounding thin layer most may be all subatomic particles are transported towards the two co-rotating vortexes and that way discharged towards outside the black hole. **Figure 65k.** (No evaporation as Hawking stated!)
- 10) Those subatomic particles remain trapped rotating within both vortexes for many thousands to possibly millions of years. During that period all neutrinos, photons and quarks are very gradually formed back from particles with only mass to particles with both mass and matter exclusively in the form of ordinary protons and ordinary electrons. The basic building blocks of the H atom and atoms. **Document F1c & figures www.uiterwijkwinkel.eu** show how this build-up of protons and electrons takes place.
- 11) **Figures 65l and 65m:** That reconstruction from neutrinos/photons and quarks to eventually protons/ electrons takes place in both green/yellow colored vortexes that extend to possibly some thousands of light years from the black hole. As long as atoms are absent, ordinary matter such as loose protons, electrons does not generate any form of gravity and gravitational energy and aren't effected by the gravity of the blackhole!
- 12) At the end of the vortex formation of the H atom/H₂ molecule occurs resulting in two processes: a) in combination with velocity, the shell electrons of the H atom/H₂ molecule generate gravity and b) the formed hydrogen cools down quickly up to about 20 Kelvin; the condensation point of hydrogen at which hydrogen loses its gas-pressure and entropy.
- 13) Both together results in the formation of cold liquid rotating spheres of basically almost pure hydrogen! The formation of H/ H₂ and the associated gravity/gravitational energy does not occurs until the vortex has reached a distance about a thousand light-years away from the accretion disk of the galaxy. So far away the enormous gravitational pull of the central black hole!
- 14) Due to the gravitation of that liquid hydrogen, both vortexes narrow into a rapidly rotating jet of hydrogen mixed with locally present higher elements starting Be that originate the Big Bang explosion at the start of the galaxy itself. Those Big Bangs happened about 20 - 25 billion years ago. Described in **step 16 document G7 and figures 42 – 54 G8.**
- 15) Only after cooling this hydrogen to its condensation point at approximately 20 kelvin that hydrogen loses its gas pressure/ entropy. Due gravity H/ H₂ rotating spheres of liquid hydrogen are formed at the axis of the vortex.
- 16) Through mutual collisions with small H₂ spheres, within both vortexes will result forming larger spheres increasing in size. Due such collisions these almost pure H₂ spheres becoming increasingly hotter and hotter until they reach the preliminary phase of nuclear fusion and phase of a star.
- 17) Due to gravity, their speed of movement relative to the plane of rotation of these central black holes decreases further and further. In the elliptical (E)/M galaxies their generated gravitation is about a thousand times greater relative spiral (S) galaxies. This much higher amount of gravity will slow down those H₂ spheres much faster than in those approximately thousand times 'lighter' central black holes of the spiral (S) galaxies.
- 18) Gravity and collisions between newly formed (blue) rotating H₂ spheres causes the formation of almost pure H₂ pre-stages of stars which are mixed with higher elements from Be onwards. These elements are necessary for starting the nuclear fusion process. Collisions make those pre-stars bigger and hotter until nuclear fusion starts in full. Then they transform into real stars.
The yellow spheres in figures 65l and 65m.

- 19) Both vortexes at (S) galaxies and may be (E)/M galaxies eject a more or less continuous stream of new pre-stars and stars. Due to the movement of the original galaxy, the direction of both vortexes also change slightly. Over billions of years, such parallel sub-galaxies can form in at least two, and possibly more locations, at more or less equal distances from the accretion disk.
- 20) However, in the compact elliptical (E)/M galaxies with an approximately thousand times greater gravity, those hydrogen spheres/stars are slowed down much more. Possibly these H₂ spheres return prematurely to the nuclear fusion zone of the blackhole and are absorbed into that central black hole after nuclear fusion up to Be.
- 21) With all spiral (S) galaxies which generate about a thousand times less gravitation, two or more subgroups of many thousands – millions of stars can be expected being formed at thousands of light years away. This results in two or more much smaller parallel galaxies.
- 22) Initially without smaller central black holes. In time of billions of years, such smaller central black holes may well develop.
- 23) Over the next 350 - 450 billion years, all currently formed parallel galaxies will completely merge into the central black hole of their own galaxy via collisions with (S) and (E)/M galaxies. Eventually all galaxies and sub-galaxies will be merged into the central cluster black hole/ CCBH now already present as biggest local (E)/M galaxy. In this local CCBH the Milky Way galaxy will eventually merge with about 4 - 6 thousand other nearby galaxies.
- 24) In 350 – 450 billion years, gravitation will also put an end to the expansion of this always perfectly round universe-sphere-shell/ USS. **Step 23 document G7**. The universe/the universe-sphere-shell then has a radius of approximately 10 – 12 billion light years or possibly even more.
- 25) At the end of the maximum expansion of the universe/ universe-sphere-shell, this USS consists of only about 4 – 20 million central cluster black holes (CCBH) and an absolute vacuum without atomic gases in between.
The universe/the universe-sphere-shell/ USS will be absolutely dark (no more neutrinos/ photons/ quarks) and will be absolutely cold (≤ 0 Kelvin; without infrared photons). Due to gravity, the universe/USS then shrinks back towards center C for the next, very same, cycle of the universe.
- 26) The universe and its fixed energy-neutral cycle of 29 steps, **document G7**, form a 100% closed system for mass, matter and energy that can be modeled mathematically and thus can be quantified physically, chemically via that model as a whole as well in detail. **Document G15 www.uiterwijkwinkel.eu explains.**

Figure 65j: Cross-section central black holes galaxies and accretion disk.



Concept: A. P. B. Uiterwijk Winkel MSc
Design: A. R. Yadava

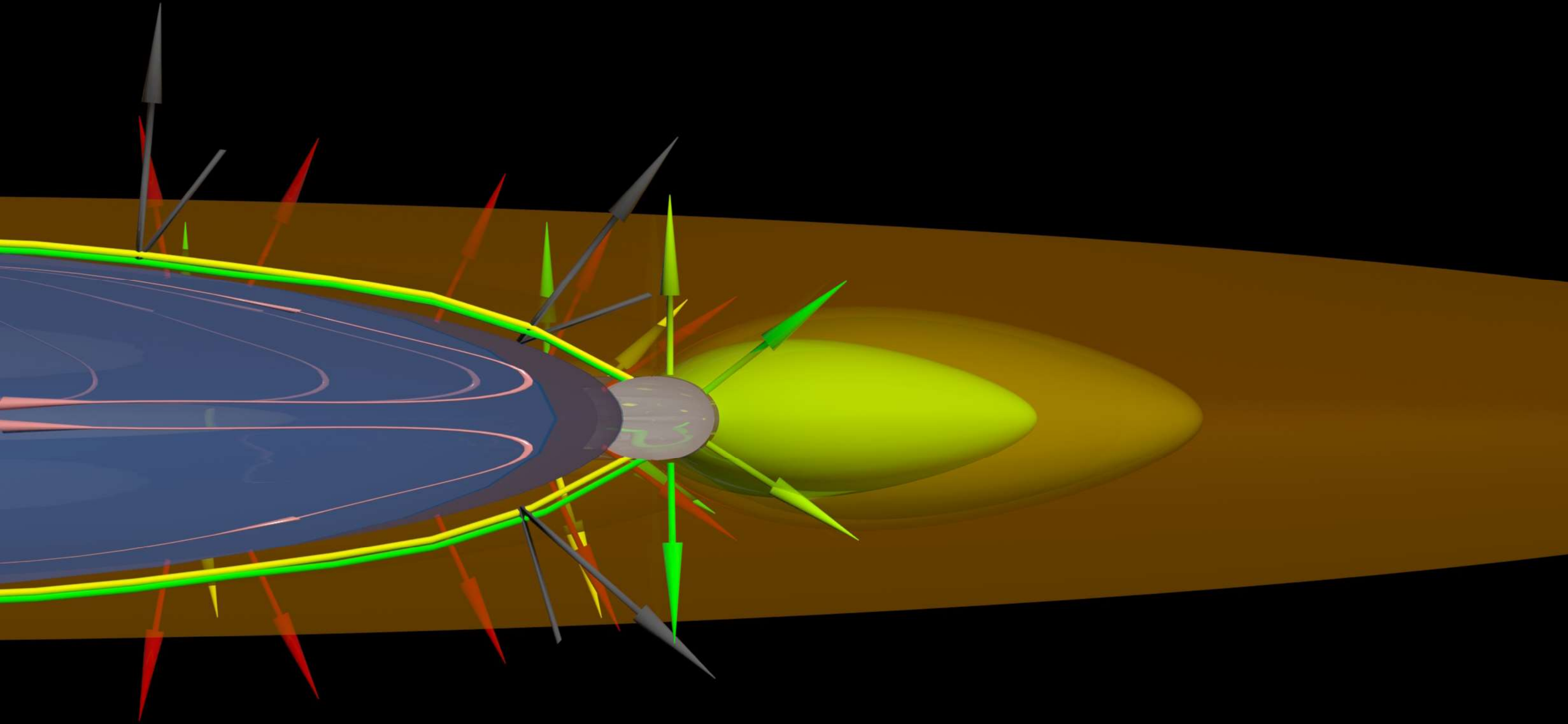


Figure 65k: Transport EM radiation through thin layer H, H2, He and Li around central black holes galaxies.

Concept: A. P. B. Uiterwijk Winkel MSc
Design: A. R. Yadava

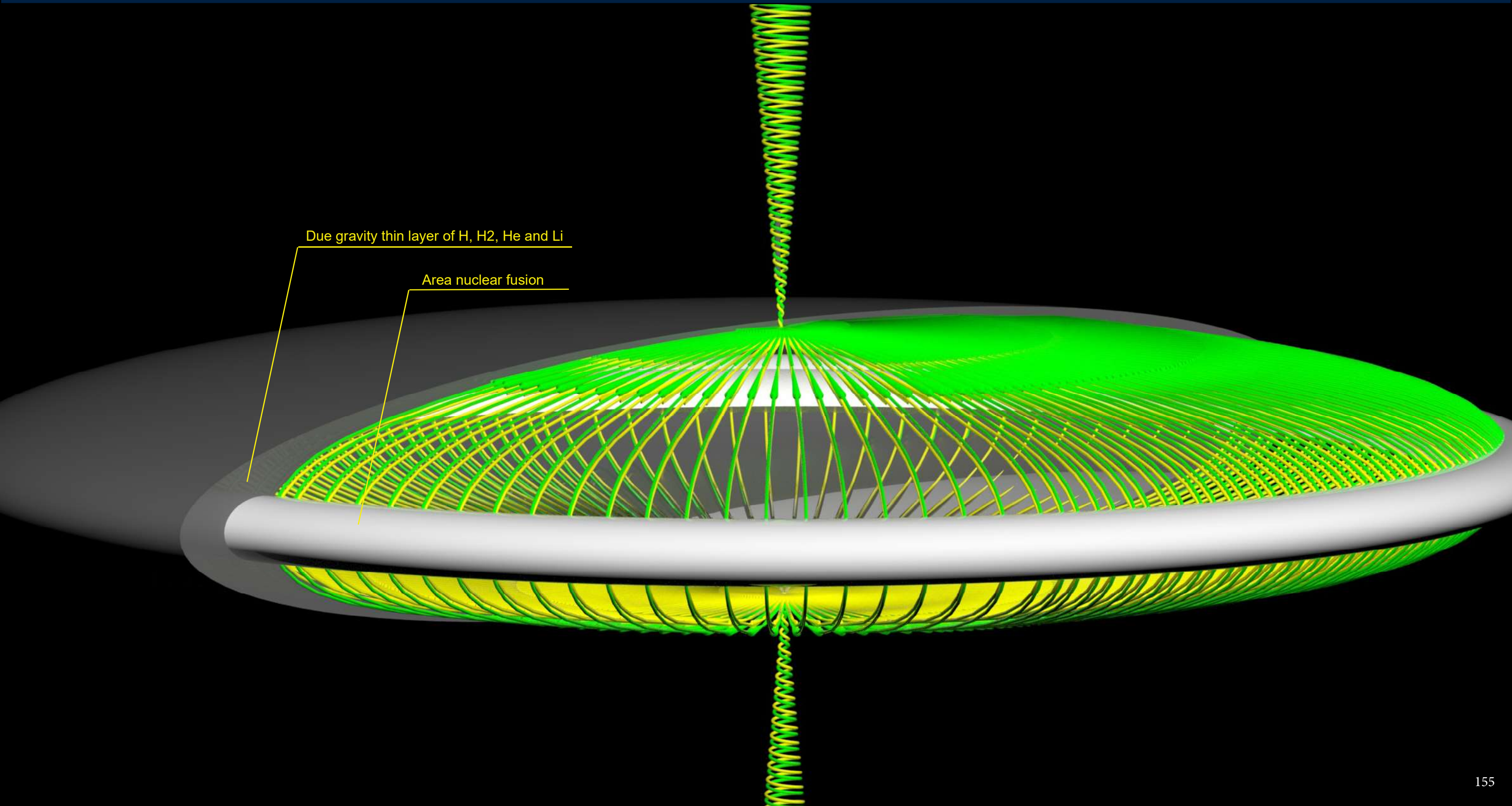



Figure 65l: Cross-section central black holes galaxies and accretion disk.

 Concept: A. P. B. Uiterwijk Winkel ^{MSc}
Design: A. R. Yadava

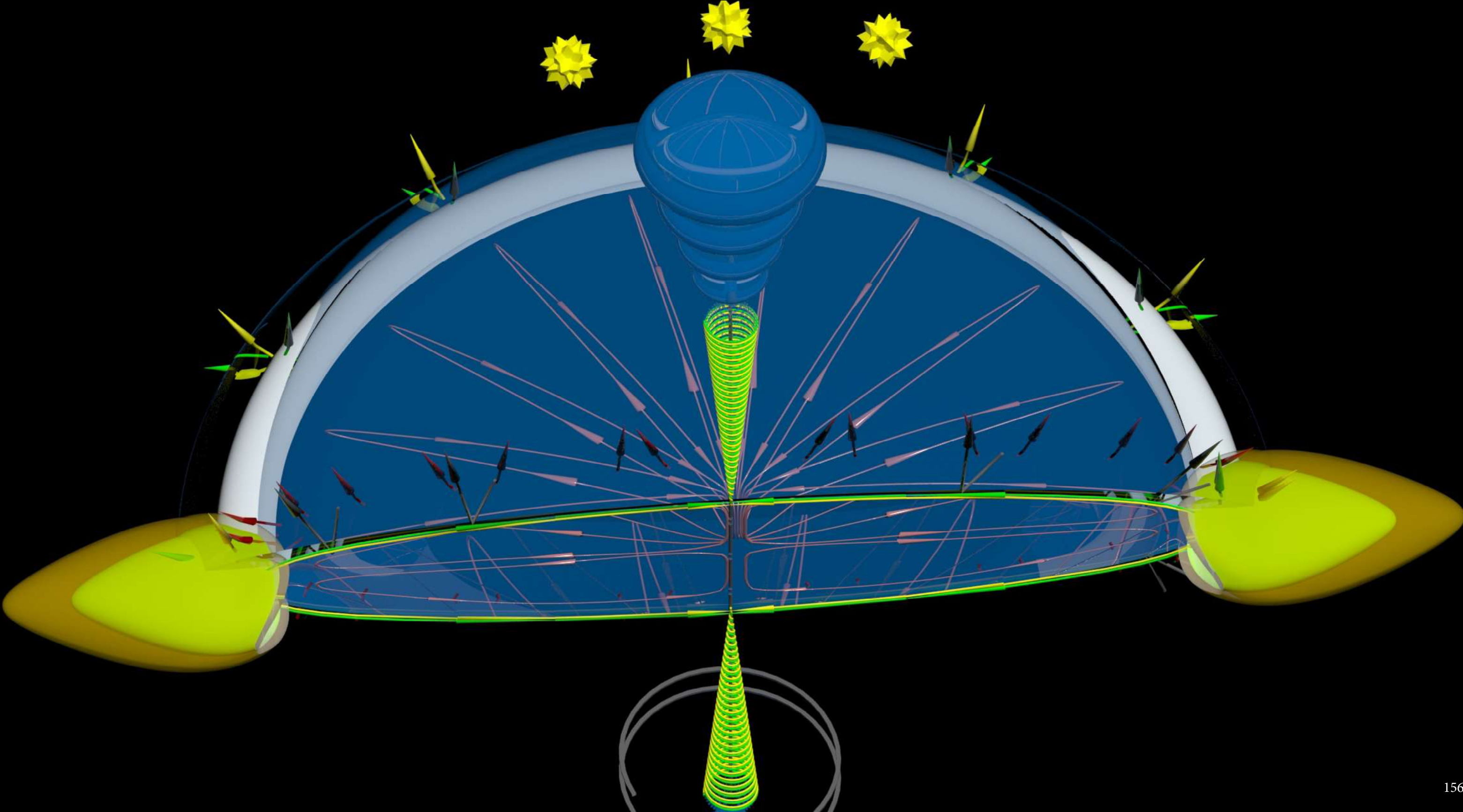


Figure 65m: cross-section central black holes galaxies and accretion disk.



Concept: A. P. B. Uiterwijk Winkel MSc
Design: A. R. Yadava

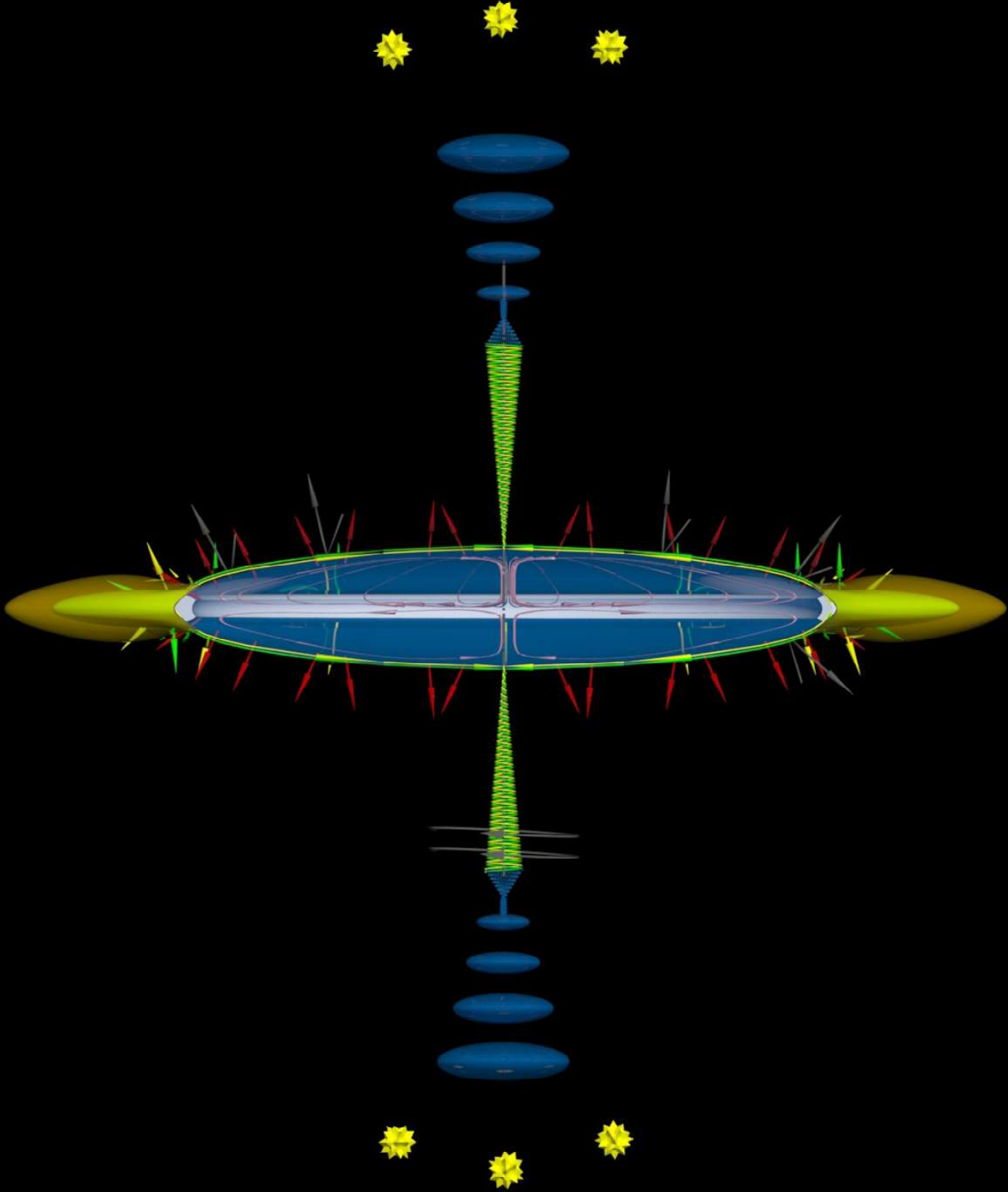
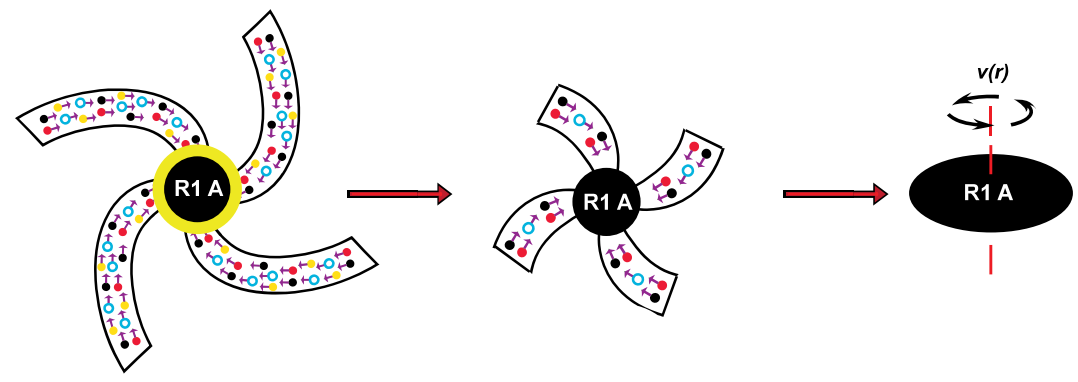
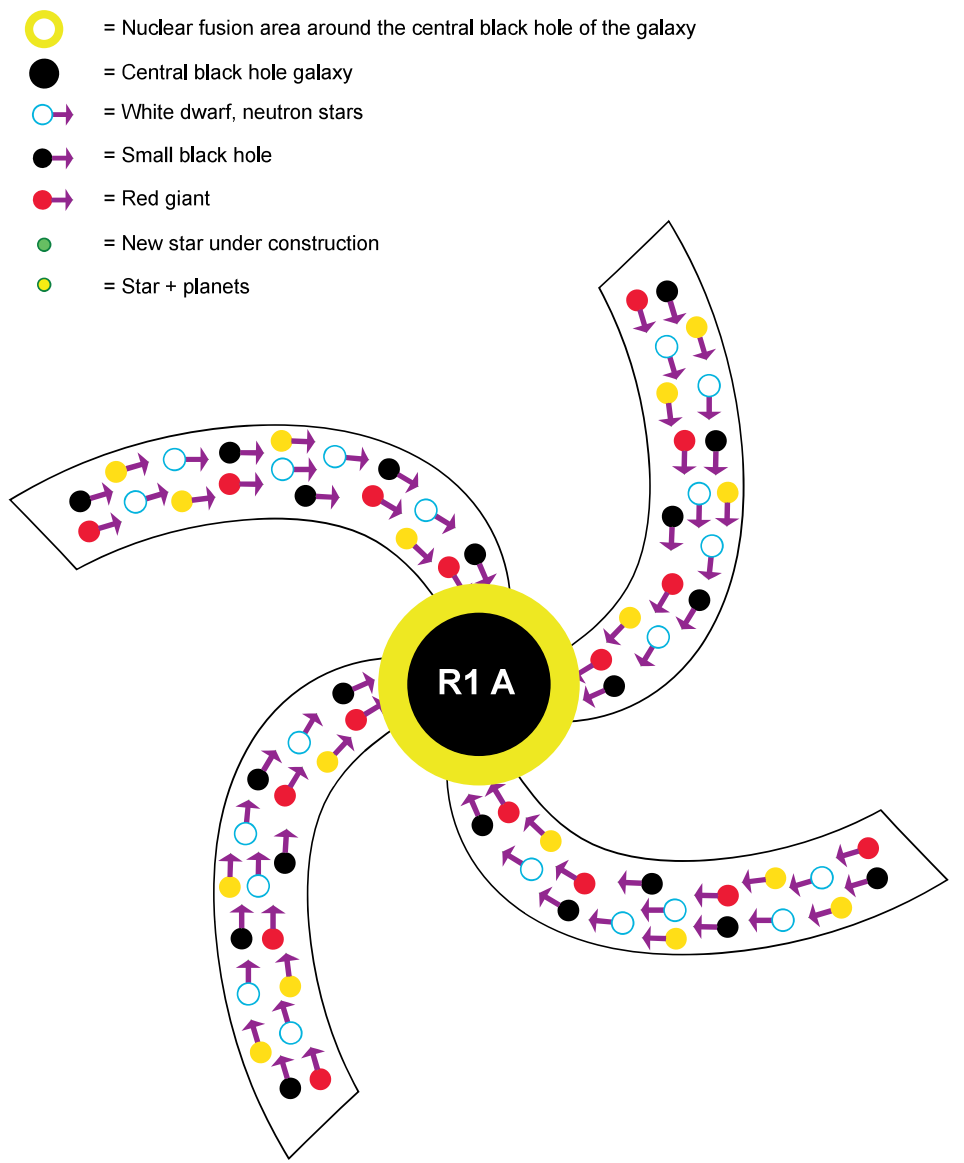


Figure 66: Final phases of galaxies disappear completely into their own central black hole of the galaxy and finally in the central facet black hole.

All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise



- = Nuclear fusion area around the central black hole of the galaxy
- = Central black hole galaxy
- → = White dwarf, neutron stars
- → = Small black hole
- → = Red giant
- = New star under construction
- = Star + planets

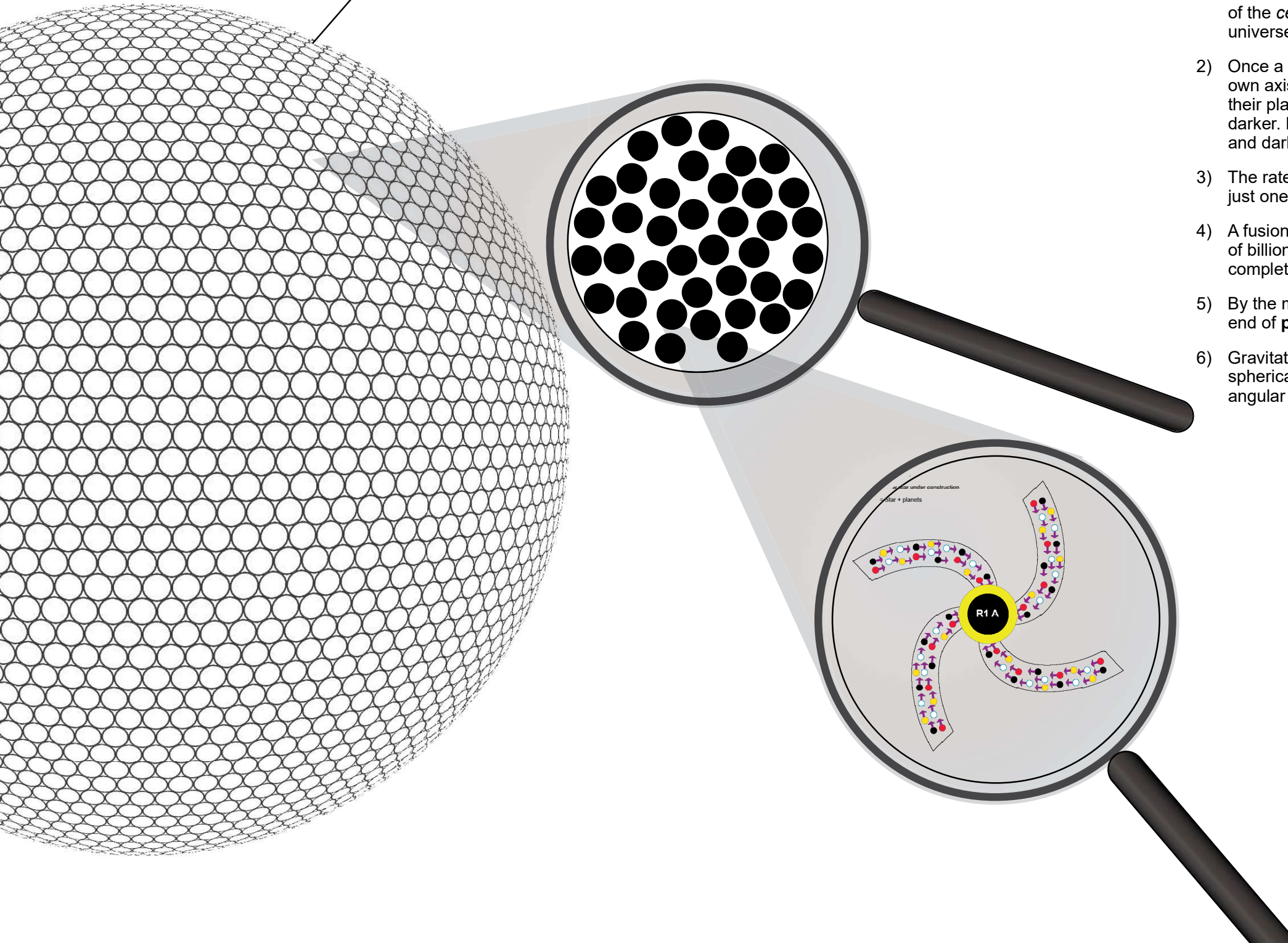
Explanation: Phase 23 of the cycle of the universe

- 1) In all the galaxies, the spiral arms eventually disappear into their own central black hole **R1 A** of the galaxy. All radiation, which has previously been emitted, is transformed into protons, electrons and then into hydrogen. In stars this hydrogen is fused to beryllium and higher elements.
- 2) In the universe-spherical-shell, *each galaxy and each facet area* emits and absorbs, on average, the same amount of radiation.
- 3) The angular speed of the central black hole and *central facet black hole* increases gradually to $\frac{1}{3}^{rd}$ to $\frac{1}{2}^{th}$ of the speed of light. Ultimately, the *central facet black holes* contain all the kinetic energy from the expansion of the universe!
- 4) Around the central black hole a fusion region is present containing hydrogen, helium and lithium. At first, the size of this region increases but at the end of **phase 23** it decreases again and eventually it disappears completely. As soon as a solar system is absorbed into the central black hole the present H, He and Li aren't accepted and remains outside around this black hole and partly as radiation. See **document F1e + figures**. Around this H, He and Li have to fuse towards beryllium and higher. See the yellow zone around the black hole **R1 A**.
- 5) Once a galaxy is increasingly swallowed up by its own central black hole, less and less of that fusion area H, He and Li remains. The entire system can be understood in that all radiation and all matter disappear into the central black hole completely and ends up trapped there as black hole atoms. This takes hundreds of billions of years.
- 6) The unstable atoms in *central black holes R1* all stabilize in the following several billion years on the outside of the black holes. In time, the cosmic radiation resulting from the stabilization continue to decrease. Long before the end of **stage 23** this cosmic radiation goes down to zero. In all facet areas the present 1 – 2 thousand galaxies **R1** merge together into *one central facet black hole R1 Fa*.
- 7) In time all radiation and all the cosmic radiation has to be captured in orbits and be transformed into protons, electrons and hydrogen due to the nuclear fusion in stars or around the central black hole where it is converted into beryllium (Be) and higher elements.
- 8) The expansion rate of all *central facet black holes R1 Fa* relative to the **center C** of the universe decrease to a few tens of km/s and finally zero km/s with just one rotational/ angular speed, which increase to $\frac{1}{3}^{th}$ – $\frac{1}{2}^{th}$ the speed of light. All expansion speed/ energy is now 100% converted into rotational speed/ energy concentrated in the *central* Explanation:

Figure 67: All galaxies are increasingly being absorbed by their own *central black hole R1 A* as well in their *central facet black hole R1 Fa*.

All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise

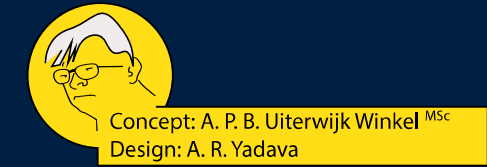
Still expanding universe spherical shell








Phase 23 of the cycle of the universe.

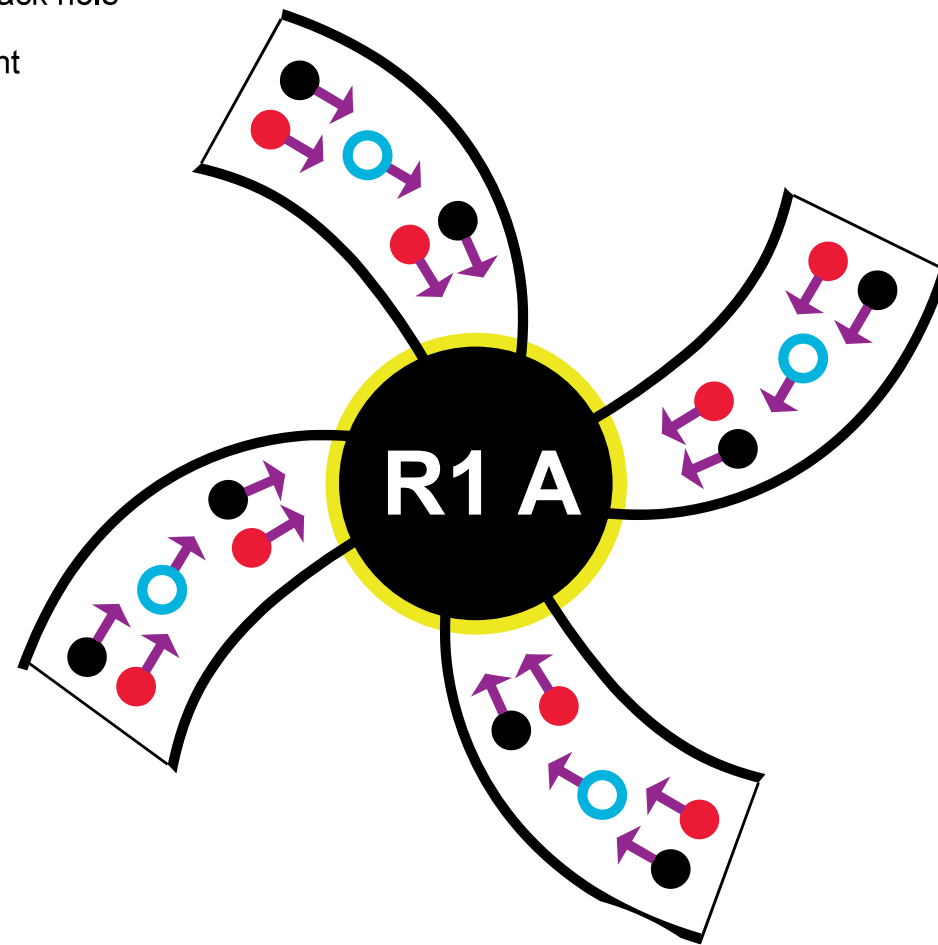
- 1) All galaxies, including all previous radiation increasingly disappear into their own *central black hole* of which the equatorial speed rises to about $\frac{1}{3}$ rd – $\frac{1}{2}$ rd of the speed of light. This rotation of the *central black hole* contains all the kinetic energy released by the expansion of the universe. In all facet areas all present galaxies merge into one *central facet black hole*.
- 2) Once a galaxy is fully absorbed into his *central black hole* which is rapidly rotating around its own axis, only the leftover of the fusion with H, He and Li that comes from burnt-out stars and their planets, remain. The cosmic radiation in the universe decreases and the universe gets darker. Finally all galaxies in the *central facet black hole*. Then the universe is completely cold and dark.
- 3) The rate of expansion of the *central facet black holes* has been reduced to tens of km/s with just one forms of rotation of $\frac{1}{3}$ th – $\frac{1}{2}$ th the speed of light.
- 4) A fusion region is present around all the black holes. Around all black holes with time of tens of billions of years the nuclear fusion area becoming smaller in size and eventually disappears completely far before phase 23 is over.
- 5) By the merger of galaxies, the number of *central black holes* decrease significantly till at the end of **phase 23** in all facet areas only one *central facet black hole* remains.
- 6) Gravitation reduces the expansion speed of these *central facet black holes* in the universe-spherical-shell to km/s to m/s. The released kinetic energy is almost completely converted to angular velocity of the existing 4 – 20 million *central facet black holes R1 Fa*.

**Figure 68: Every galaxy ends in a central black hole surrounded by a fusion region.
All facet galaxies in one central facet black hole.**



All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise

-  = Nuclear fusion area around the central black hole of the galaxy
-  = Central black hole galaxy
-  = White dwarf, neutron stars
-  = Small black hole
-  = Red giant



Explanation: End of Phase 23 of the cycle of the universe

- 1) All stars are completely fused. Only white dwarfs, red giants and local black holes remain.
- 2) The entire star system including all electromagnetic radiation and particle radiation, which was emitted previously, is included in the central black hole R1 A of the galaxy or into one of the other billions of black holes in the universe spherical shell.
- 3) The previously existing fusion space disappears from around the central black holes.
All central black holes are now completely stabilized and do not send out cosmic radiation anymore.
- 4) Within each facet area all 1 – 2 or more galaxies and their central black holes R1 A merge together in one central facet black hole R1 Fa. These *central black holes* rotate at 100 to 150 Mm/s or 1/3rd to 1/2th of the speed of light c either clockwise or anti-clockwise around their axes.
- 5) All axes of rotation are directed at the **center C** of the universe. Due to the rotational speed the central facet black hole becomes significantly flattened and has a diameter of 400 to 700 Mm.
- 6) The rate of expansion of the *central black holes* has now been reduced to a few km/s. The former 4 - 5 rotational speeds of the *central black holes* have already been reduced during the fusion of the galaxies.
- 7) At the end of phase 23 the central black holes only possess their own rotational speed and all axes are directed towards the center C of the universe.

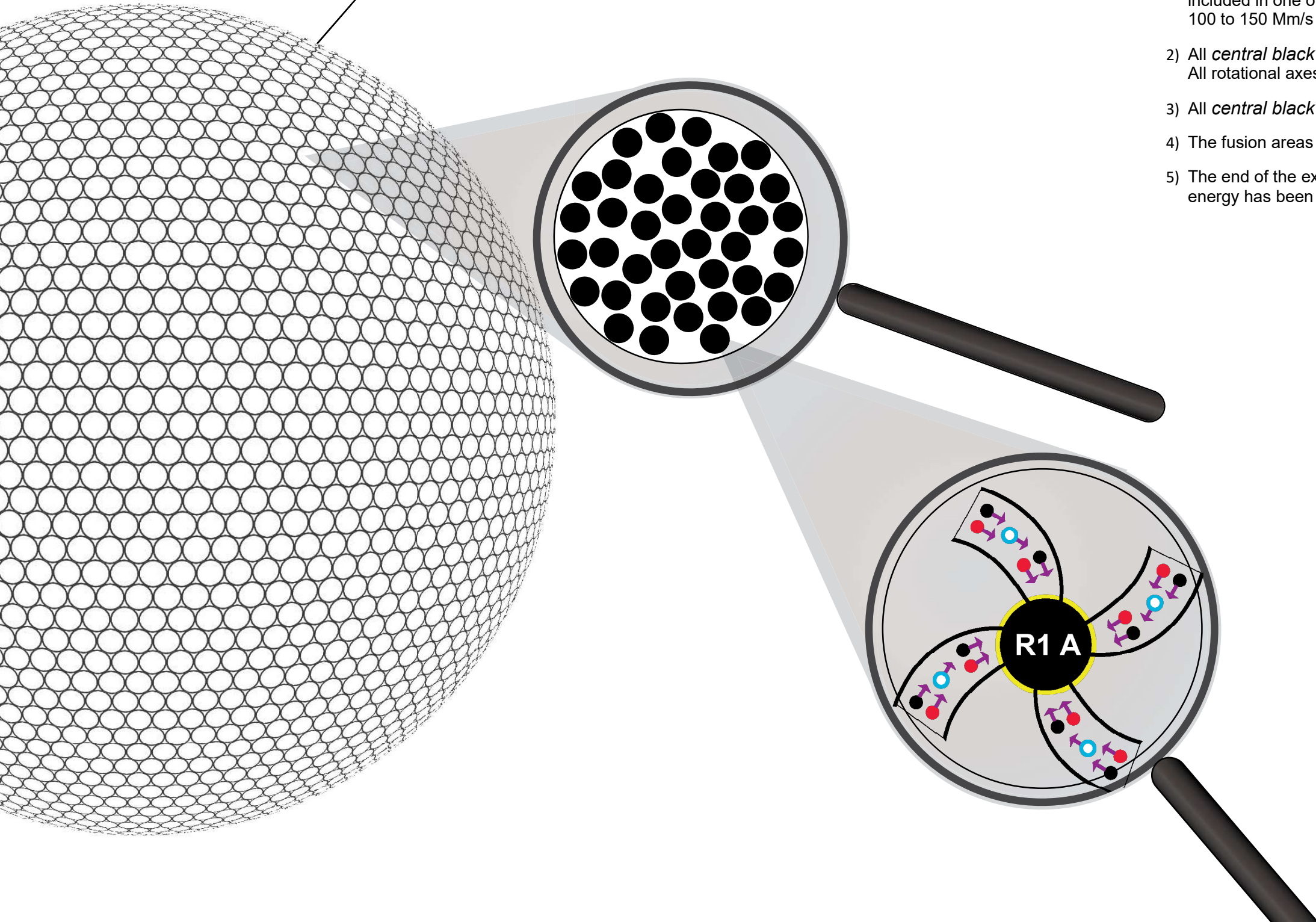
Figure 69: All the galaxies disappear further and further into their own central black hole.



Concept: A. P. B. Uiterwijk Winkel MSc
Design: A. R. Yadava

All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise

Still expanding universe spherical shell



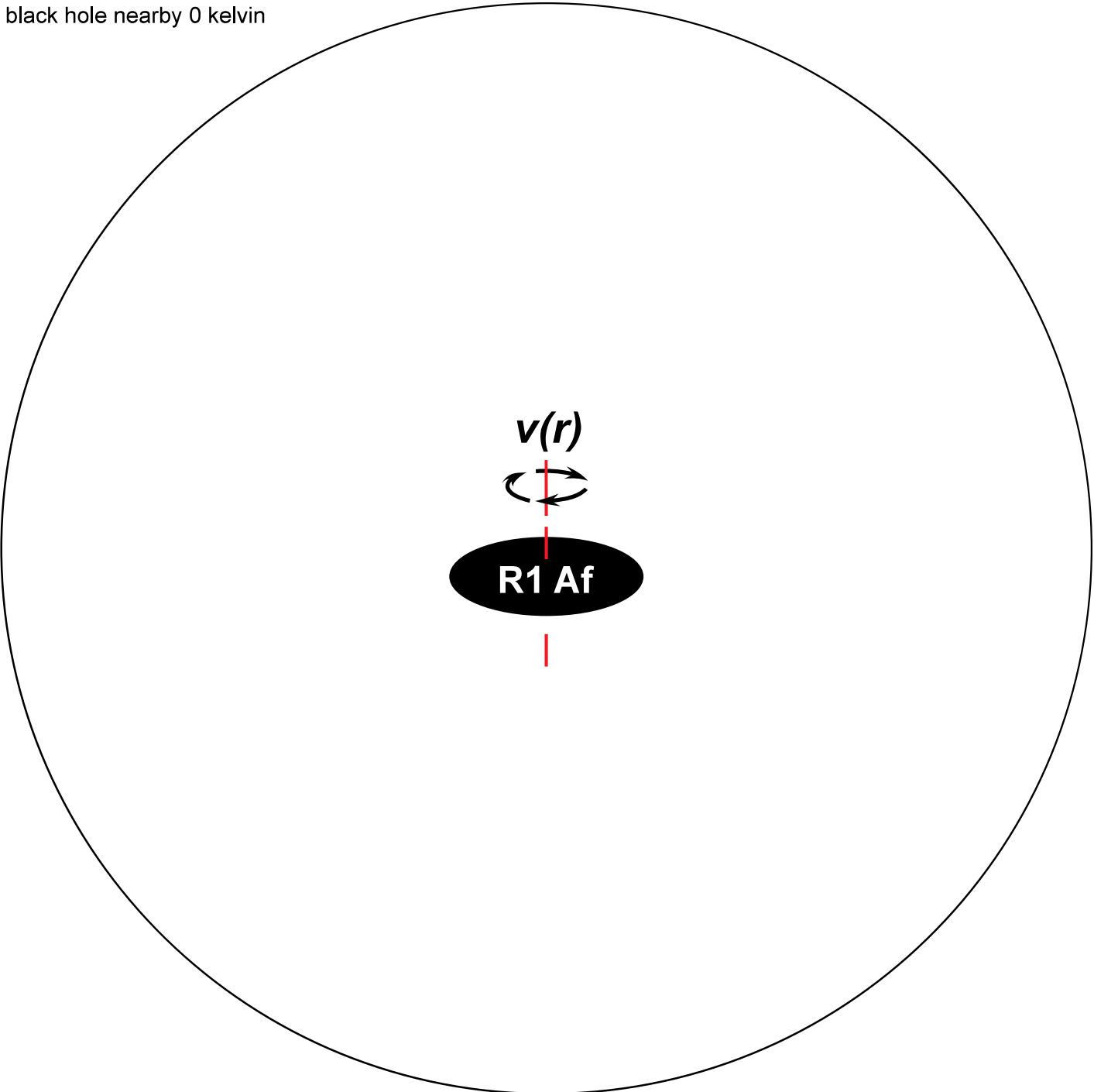
Explanation: **End of phase 23 of the cycle of the universe**

- 1) The entire galaxy, including all electromagnetic radiation and particle radiation emitted earlier, is included in one of the billions of *central black holes R1 A* which all have a equatorial speed of 100 to 150 Mm/s clockwise or anti-clockwise.
- 2) All *central black holes*, which has become strongly flattened, has a diameter of 30 to 40 Mm. All rotational axes are directed towards the center C of the universe.
- 3) All *central black holes* are fully stabilized and do not send out any cosmic radiation anymore.
- 4) The fusion areas have disappeared completely.
- 5) The end of the expansion of the universe-spherical-shell relative to C approaches. All expansion energy has been transformed into the rotational energy of the *central black holes*.

Figure 70: The nuclear fusion process is fully completed. The galaxy and its radiation is 100% fully incorporated into the central black hole. In all 4 – 20 million facet areas all central black holes R1 are merged in one central facet black hole R1 Fa.

All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise

● = Central black hole nearby 0 kelvin



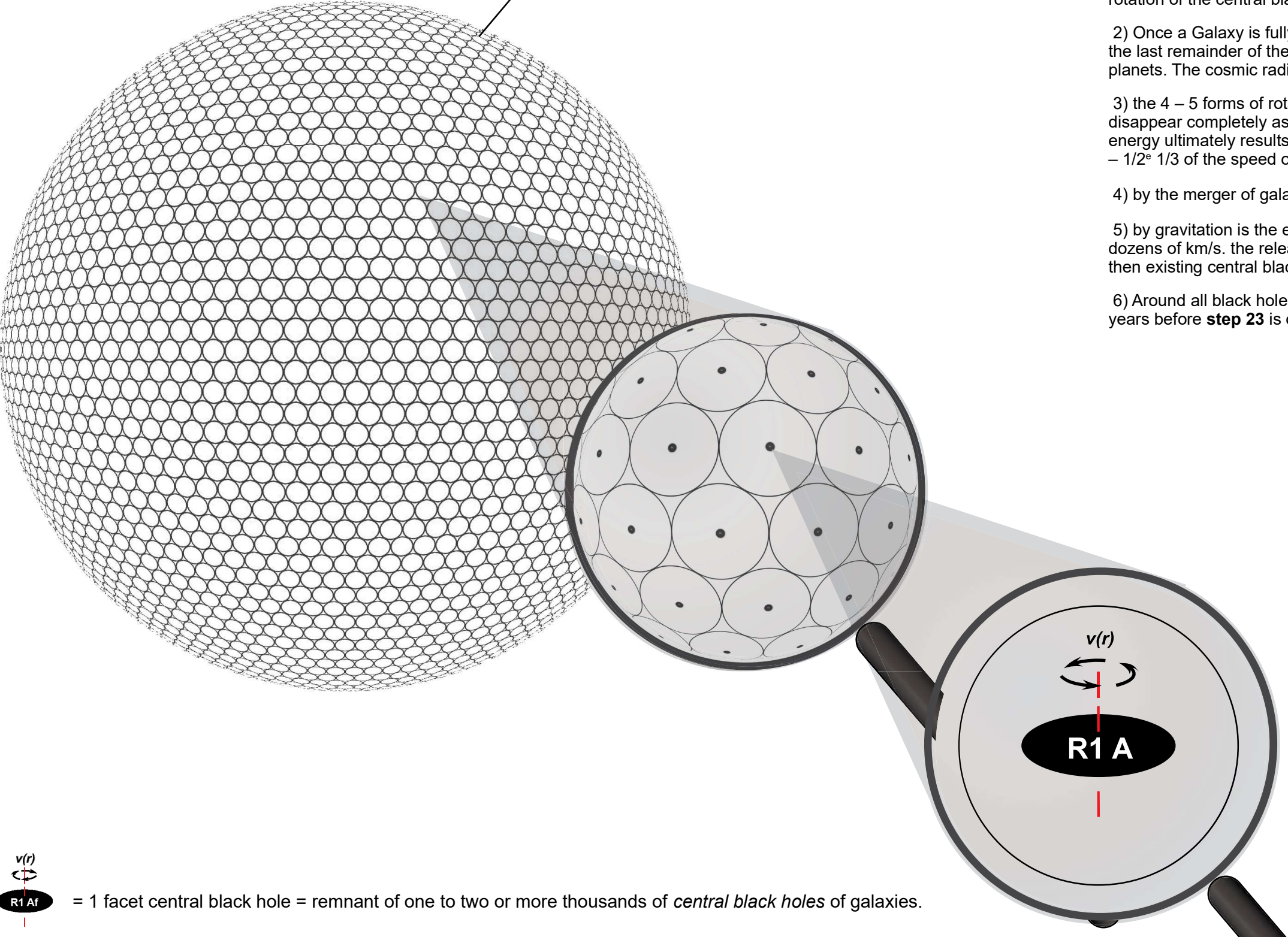
Comments: **End step 23 universe cycle**

- 1) the entire star system including all previously broadcast electromagnetic radiation and particle radiation is included in local black holes and in the central black hole or in one of the other billions of black holes.
- 2) the remaining Central black hole rotates at approximately 100-150 Mm/s or $\frac{1}{2} \frac{1}{3}^e - c$ counterclockwise or clockwise on its axis. This rotation axis is exactly aimed at the Centre C of the universe. That by the rotation speed strongly flattened central black hole gets a diameter of around 40 – 70 Mm.
- 3) the *central black holes* is fully stabilized and emits no cosmic radiation.
- 4) it used existing fusion area is now completely gone.
- 5) In the remaining spiral arms/**Franks** are no star more present, only remnants of stars in the form of white dwarfs, red giants and local black holes all at 2.7 kelvin.
- 6) the 4 – 5 rotation speeds of the central black hole in the past, in the mean time completely disappeared during the fusion of the galaxies. It increased in size possess Central black hole at the end of **step 23** only has its own rotation speed. The axis of rotation is focused on Center C of the universe.

Figure 71: At the end of the expansion of the universe-spherical-shell all galaxies have disappeared into their central black hole. The universe is absolutely cold and dark.

All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise

Expansion universe spherical shell = 0



By the end of **step 23** universe cycle.

- 1) all galaxies including all previously emitted radiation disappear more and more in the own central black hole whose rotation speed increases to about $1/2^e$ $1/3^e$ – of the speed of light. This rotation of the central black hole than all the kinetic energy of the expansion of the universe.
- 2) Once a Galaxy is fully incorporated in the fast on its axis Rotary Central black hole left only the last remainder of the fusion area with H, He and Li that comes from burned out stars and their planets. The cosmic radiation in the universe, and the universe is getting darker.
- 3) the 4 – 5 forms of rotation and rotational speeds of galaxies from the beginning of **step 23** disappear completely as more and more galaxies are combined into larger ones. This kinetic energy ultimately results in an increase in angular velocity of Central black hole to the then present^e – $1/2^e$ $1/3$ of the speed of light c.
- 4) by the merger of galaxies is significantly decreased the number of *Central black holes*.
- 5) by gravitation is the expansion speed of these *central black holes* has been reduced to dozens of km/s. the release kinetic energy is almost completely converted to angular velocity of the then existing central black hole.
- 6) Around all black holes is the fusion area eventually completely disappeared tens of billions of years before **step 23** is over.


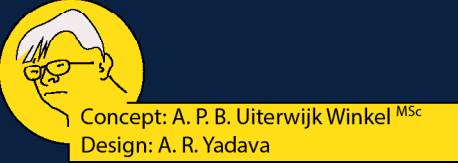
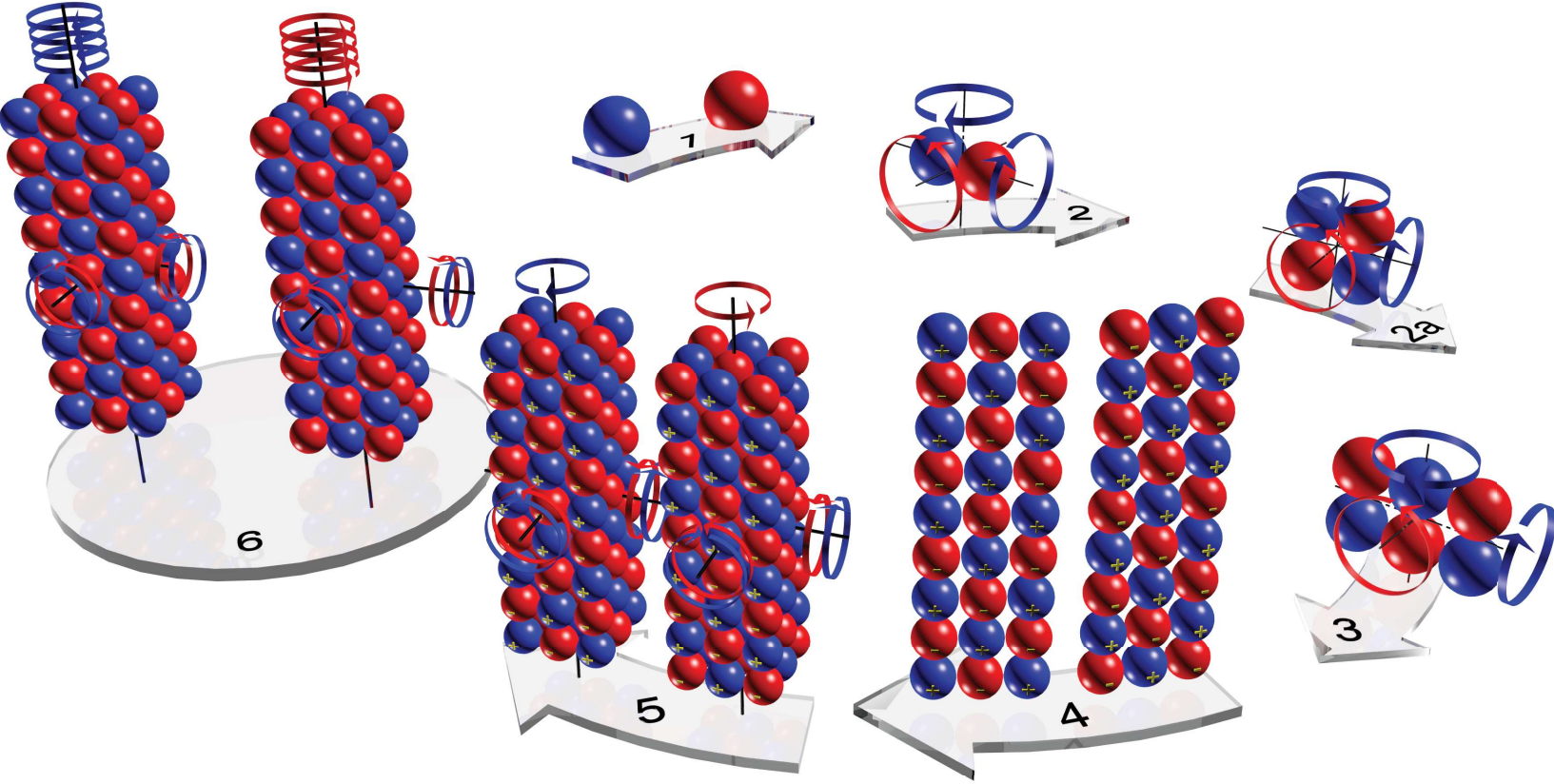
 = 1 facet central black hole = remnant of one to two or more thousands of *central black holes* of galaxies.

Figure 72: Protons and anti-protons reverted back from Higgs particles, neutrinos, infra-red photons, proto-protons and particle radiation.



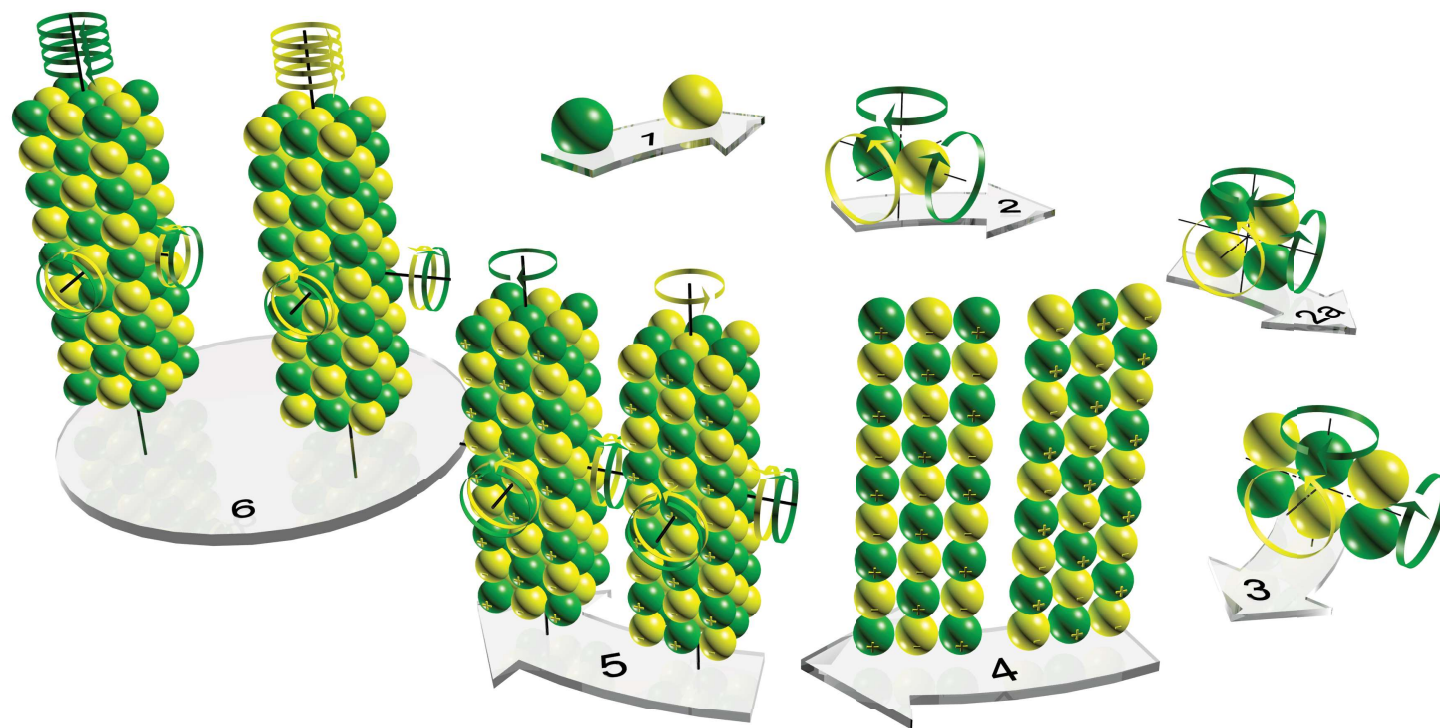
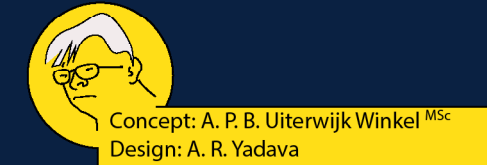
Explanation: **Phase 24 cycle of the universe.**

- 1) by merging galaxies takes the central black hole in size and get this at the end remaining *Central black holes* a diameter of about 30 – 70 Mm. the number of *Central black holes* is decreased significantly. The original 4 – 5 rotation speeds go full on into those of the remaining *Central black hole*. Eventually left only the angular velocity of this great *central black holes* that are made up of dozens of galaxies and R1 's average.
- 2) all previously broadcast electromagnetic radiation and particle radiation as matter again fully included in one of those remaining *Central black holes* that with around 100-150 Mm/s or $\frac{1}{2}$ $\frac{1}{3}$ – c somewhere their axis rotate. That rotation results in rotation gravitation.
- 3) the expansion speed of all remaining *Central black holes* t.o.v. C is reduced to zero.
- 4) all *central black holes* are already tens of billions of years fully stabilised and send no more from cosmic radiation.
- 5) by the rotation gravitation of the *central black holes* start shrinking the universe. That is **step 25**. That is simultaneously shrinking simultaneously for all *central black holes* in the universe shell.



- 1 = proton higgs / anti proton higgs
- 2 = proton neutrino / anti proton neutrino
- 3 = proton double neutrino / anti proton double neutrino
- 4 = proton photon / anti proton photon (infrared photons)
- 5 = 1/3th part of proton / anti proton
- 6 = proton / anti proton with $E = mc^2$ added rotation energy → matter or anti matter

Figure 73: Converting electrons and anti-electrons from Higgs particles, neutrinos, light-photons, proto-electrons and particle radiation.



Explanation: Phase 24 of the cycle of the universe

- 1) The expansion rate has decreased to 0 km/s simultaneously and everywhere. All matter, all electromagnetic radiation, all particle radiation and all the kinetic energy, previously emitted, is completely locked in the 4 – 20 million *central facet black holes*. All rotating at approximately 100 to 150 Mm/s or $\frac{1}{3}^{\text{th}}$ to $\frac{1}{2}^{\text{th}}$ of the speed of light. All *central facet black holes* rotate the same direction; either clockwise or all anti-clockwise, around their own axes. All rotational axes are directed towards the **center C** of the universe. This rotation results in rotational gravity.
- 2) Due to the merging of the galaxies, the *central facet black holes* has a maximum size of approximately 300 to 700 Mm in diameter. The billions of galaxies is reduces to 4 – 20 million *central facet black holes F1 Fa*.
- 3) The universe-spherical-shell reaches its maximum possible extent as a perfectly round universe-spherical-shell with a radius of about 3.0 to 3.5 billion light years. Now the expansion velocity is completely converted into the rotational speed of the *central facet black holes* and in gravitational energy relative to the **center C** of the universe.
- 4) Due to the gravitational rotation of the *central black holes*, the universe starts shrinking again. This happens during **phase 25**. The contraction applies simultaneously to all *central facet black holes* in the universe-spherical-shell and with the same speed.
- 5) All the *central black holes*, flattened by the rotation, have the same diameter of approximately 400 to 700 Mm. All the rotational axes of these *central facet black holes* are perpendicular to the plane of the local universe-spherical-shell and are directed exactly towards the **center C** of the universe.
- 6) All the *central facet black holes* have already been fully stabilized for billions of years and do not send out any cosmic radiation anymore.
- 7) Temperature *central facet black hole* is 2.7 kelvin

1 = electron higgs / anti electron higgs

2 = electron neutrino / anti electron neutrino

3 = electron double neutrino / anti electron double neutrino

4 = electron photon / anti electron photon (light photons)

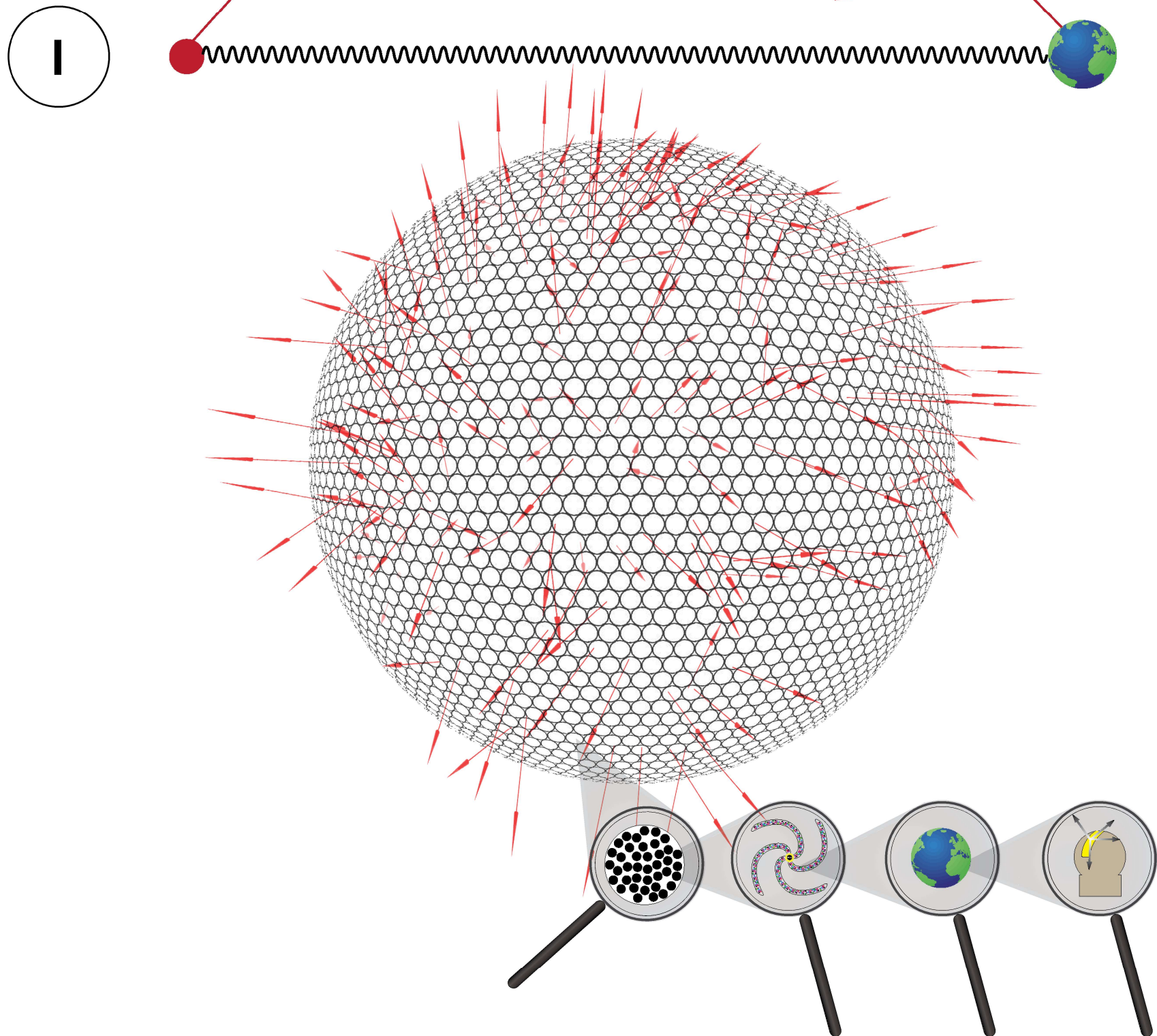
5 = $\frac{1}{3}^{\text{th}}$ part of electron / anti electron

6 = electron / anti electron with $E = mc^2$ added rotation energy → matter or anti matter

Figure 74: Case 1: A completely open universe.
 All emitted neutrino's and photons exist indefinitely and travel linearly through the universe.
 Their orbits are not deflected. The universe-spherical-shell (USS) continuously loses mass, matter, charge, spin and kinetic energy.


 Concept: A. P. B. Uiterwijk Winkel MSc
 Design: A. R. Yadava

All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise



Explanation: Phases 17 to 24 of the cycle of the universe

Step 1) The two super-symmetrically Higgs particles are the smallest possible mass-particles of the proton and of the anti-proton. For details and figures see **document F1a 2014**. Both Higgs differ only in the main rotational direction around the longitudinal axis either clockwise or anti-clockwise. These elementary proton-Higgs cannot annihilate with its anti-proton Higgs! **No $E = mc^2$ at Higgs level!** In the normal *relative calm state* at Higgs level there is a fixed amount of kinetic energy. This condition is associated with three fixed angular velocities of the particles - one rapid rotation around the longitudinal axis and two, much slower, equal rotations around the transverse axes in both rotational directions. The angular speed around the longitudinal axis is approximately a thousand times greater than those around the two transverse axes. Both proton-Higgs differ primarily only in the directions of the rotation! The three fixed angular velocities result in the relative state of rest throughout the universe and at a fixed amount of: a) mass and/or anti-mass, b) a positive or negative electric charge, and c) parallel or anti-parallel magnetic spin. Both Higgs particles have the same, but opposite, spatial shape and differ in character regarding both mass, charge and magnetic spin. Higgs annihilation cannot take place at any level. Annihilation only happens on the level of matter and anti-matter!

Step 2) Both Higgs particles of the proton attract each other via charge and magnetic spin and form neutrinos. These neutrinos are majoranas. Inside neutrinos the ordinary Higgs and the anti-Higgs do not annihilate each other! The neutrinos and anti-neutrino as a whole has its own three rotations! Their measurable mass, charge and spin is zero! See **Document F1b**.

Step 2a) Two neutrinos together form a double neutrinos. Again it is a majorana. An anti-majorana is also possible. The measurable mass, charge and spin of this double-neutrinos is also zero! See **document F1b**.

Step 3) Through the attachment of another neutrinos it creates the infra-red photon and the anti-infra-red photon (not shown). Again the mass, charge and spin of the photon and anti-photon are zero because the infra-red photon is a majorana particle.

Step 4) From 4.5 infra-red photons and 27 proton Higgs particles a $\frac{1}{3}^{rd}$ of the proton and/or anti-proton can be built. See **Document F1c**.

Step 5) With three parts of $\frac{1}{3}^{rd}$ of a proton and/or anti-proton and in total 81 proton Higgs particles the whole proto-proton or the entire anti-proton can be built. Such a proto-proton consists of three quarks of each 27 proton Higgs particles. In this state matter or anti-matter does not exist. First $E = \frac{1}{2}mc^2$ has to be added to the rotational energy of proto-proton clockwise or anti-clockwise to become matter (proton) or anti-matter (anti-proton).

Step 6) While passing through electric and magnetic fields of stars and galaxies the proto-protons rotate increasingly faster and faster around their longitudinal axes where ultimately $E = \frac{1}{2}mc^2$ is added to the rotational energy. With the addition of $E = \frac{1}{2}mc^2$ to the angular energy to this proto-proton or proto-antiproton the characteristic of matter (clockwise rotation) or anti-matter (anti clockwise) is added. The proton and anti-proton are now matter and anti-matter of each other. During mutual contact both particles are annihilated. In this setup a) 27 infra-red photons (majoranas) are gradually released as well as b) $E = 2 \times \frac{1}{2}mc^2 = mc^2$ rotational energy. **During this annihilation process mass is not converted into energy! Einstein's formula applies to quantitative annihilation and for m = equal matter and anti-matter. This formula does not apply to m = mass and anti-mass! For the full structure of the proton and anti-proton see **document F1c + Figures**.**

Explanation: **Phases 16 to 24 of the cycle of the universe:**

- 1) **Case 1** is based on *the assumption* that all electromagnetic radiation such as neutrinos and light / infra-red photons (majoranas) possess kinetic energy but **no measurable** mass, charge and magnetic spin. The gravity of these particles is absolute zero. In this case, this radiation is not deflected by electric, magnetic and gravitational fields emitted by stars, galaxies and black holes. The radiation of photons is only deflected during the passage through areas with gasses or liquids.
- 2) All neutrinos, photons, and sub-atomic particles of matter move through the sketched lines through the universe and emerge from the universe-spherical-shell. As long these particles don't hit an object they move on infinite straight path and with the speed of light.
- 3) A great deal of the neutrinos and photons leave the universe-spherical-shell completely. The universe is not a closed system! With each cycle, the universe would lose a large amount of mass, charge, spin and kinetic energy!
- 4) The emitted neutrino's and photons exist infinite and aren't transferred back into protons and electrons as shown in the previous **figures 72 and 73** nor transferred back into hydrogen.
- 5) Going through some cycles the universe bleeds to death and this cycle is no longer possible. Such an open universe can be regarded as a once off phenomenon. **Case 1** does not occur!
- 6) The above mentioned types of neutrinos, photons and sub-atomic radiation do not generate any form of gravity despite their mass. In no way is sub-atomic radiation deflected by gravitational fields as **Einstein** thought.
- 7) **Einstein** stated that gravity was the result of the curvature of time and space. He gave a *mathematical explanation* for gravity but he didn't give any *physically explanation* for the phenomenon of gravity.
Uiterwijk Winkel gives a *pure physically explanation* for the phenomenon gravity. Gravity is generated by the 'shell'-electrons of atoms and of black hole atoms but only in case these atoms move within the universe relative to the **center C** of the universe! Gravity arises only on the atomic level.
- 8) For the origin and composition of gravity see **documents E3, E3-1 (figures) and E4 (gravitational energy / 'dark' energy)** www.uiterwijkwinkel.eu . Anyhow gravity is not generated at the sub-atomic level but just on the atomic level and by speed of atoms! Gravity isn't an elementary force!
- 9) All neutrinos and photons are majoranas and behave as electrical dipoles and magnetic quadrupoles, however slightly. See next **Case II**.

Explanation: **Phases 17 to 24 of the cycle of the universe**

Step 1) The two super symmetrically Higgs particles are the smallest possible mass-particles of the electron and the anti-electron. These are described in detail, including figures, in **Document F1a 2014**. Both the Higgs particles only differ regarding rotation clockwise and anti-clockwise. The elementary electron-Higgs particle cannot annihilate with its anti-electron Higgs particle in the same way that the proton-Higgs particle cannot react with its anti-Higgs particle! In the normal relative state of rest, on the Higgs level, a fixed amount of kinetic energy is present. This energy is associated with three fixed angular velocities of the Higgs particles around the longitudinal axis and around the transverse axes in both directions. The rotational speed of the Higgs particles around their longitudinal axis is approximately a thousand times faster than those around both transverse axes. Both the Higgs of the electron differ primarily regarding their rotational direction clockwise or anti-clockwise! Throughout the universe, these three fixed angular velocities result in the state of relative rest in a fixed amount of: a) mass and anti-mass, b) a positive or negative electric charge and c) a parallel or anti-parallel magnetic spin. Both Higgs have the same, but opposite, basic shape and differ in character from both mass, charge and magnetic spin. On the Higgs level annihilation cannot occur! This can only happen on the level of matter and anti-matter!

Step 2) Both electron-Higgs particles attract each other due to the charge and magnetic spin and form neutrinos. Inside such neutrinos both the Higgs particles cannot annihilate each other. The neutrino and anti-neutrino has its own three rotations! The net mass, charge and spin of these neutrino particles are zero! They are majoranas. See **Document F1b**.

Step 2a) Two neutrinos together form a double neutrino. The anti-form is also possible. The net mass, charge and spin of these particles are also zero! These are also majoranas. See **Document F1b**.

Step 3) Through the attachment of another neutrino, the light (electron) photon and the anti-light (electron) photon (not shown) are created. The net mass, charge and spin of these photon are zero as well! These are also majoranas. The majoranas as a group are described in **Document F1b**.

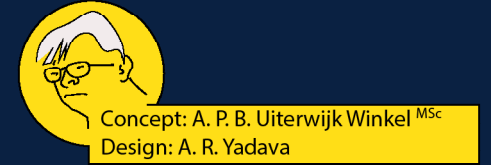
Step 4) From 4.5 light photons and 27 electron-Higgs particles $\frac{1}{3}$ rd of the proto-electron and proto anti-electron can be built. See **Document F1c**.

Step 5) The entire proto-electron and the entire proto anti-electron can be built up by three $\frac{1}{3}$ rd proto electron and anti-electron with in total 81 electron Higgs particles. Its construction consists of **three quarks** with each 27 Higgs particles. In this state, there is no matter or anti-matter. In this state matter or anti-matter does not exist. For the state of matter / antimatter rotational energy $E = \frac{1}{2} mc^2$ has to be added to the proto-electron to become matter (anti-electron) or anti-matter (the electron).

Step 6) While passing through electric and magnetic fields of stars and galaxies these proto-electrons start rotating faster and faster around their longitudinal axis where ultimately $E = \frac{1}{2} mc^2$ is added as rotational energy. The $E = \frac{1}{2} mc^2$ is added as angular energy and is also the characteristic of matter (clockwise rotation) or added anti-matter (anti-clockwise rotation). (In universe the electron in fact is anti-matter and the proton matter). From now on the electron and anti-electron are matter and anti-matter to each other. During mutual contact both particles annihilate. In this setup this results in 27 light electron photons (majoranas) with $2 \times E = 2 \times \frac{1}{2} mc^2 = mc^2$ are gradually released as rotational energy. **During the annihilation process mass is not converted into energy!**

Einstein's formula only applies to quantitative annihilation and for $m =$ matter and anti-matter. The formula does not apply to $m =$ mass and anti-mass! For the full structure of the proton and anti-proton see **Document F1c**.

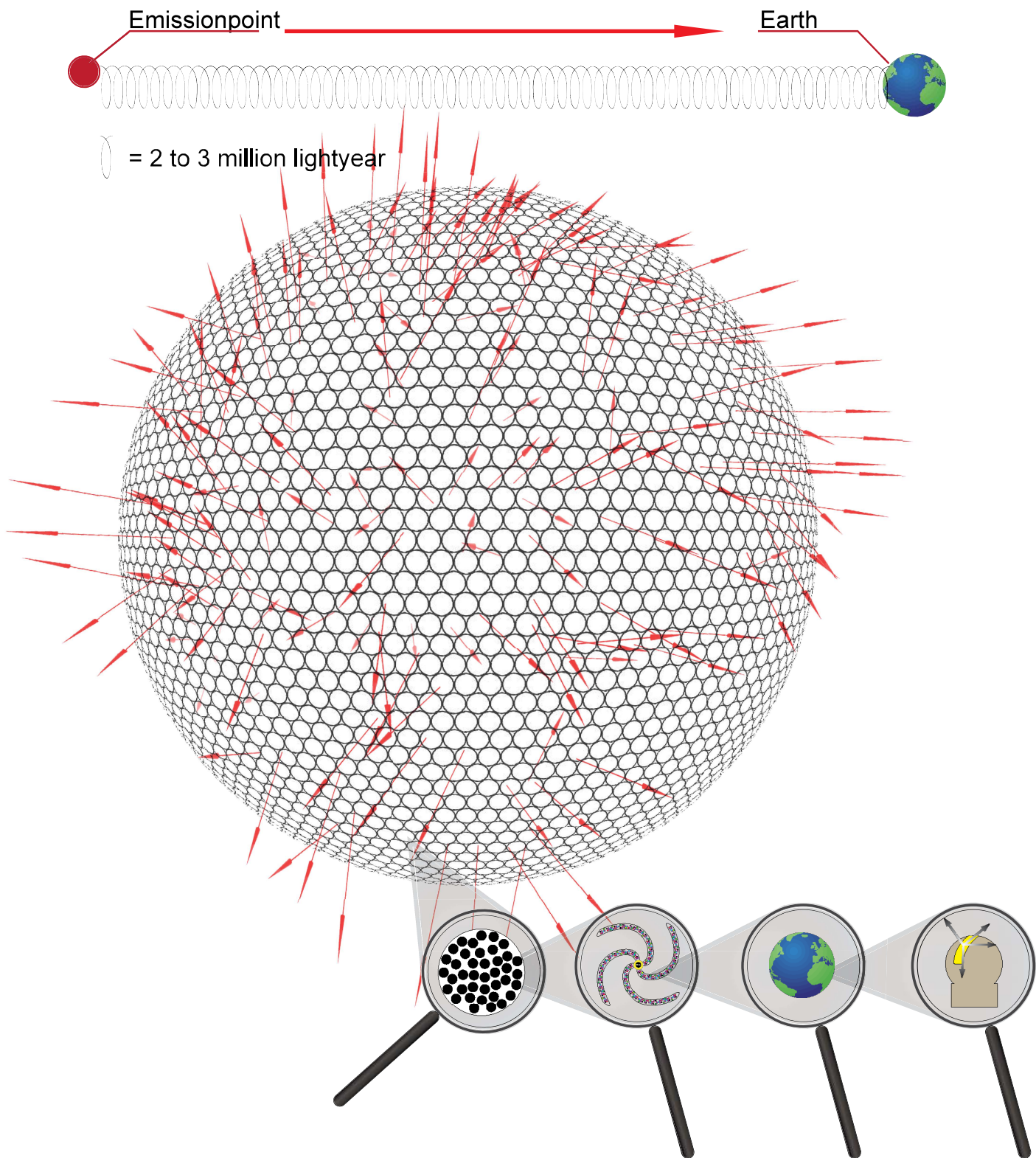
Figure 75: Case II: A completely open universe as well.
All neutrino's and photons are deflected by magnetic fields into linear spirals through the universe.
The universe-spherical -shell (USS) continuously loses mass, matter, charge, spin and kinetic energy.



All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise



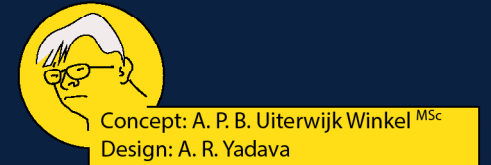
Beams of light and particles of matter as pure straight lines



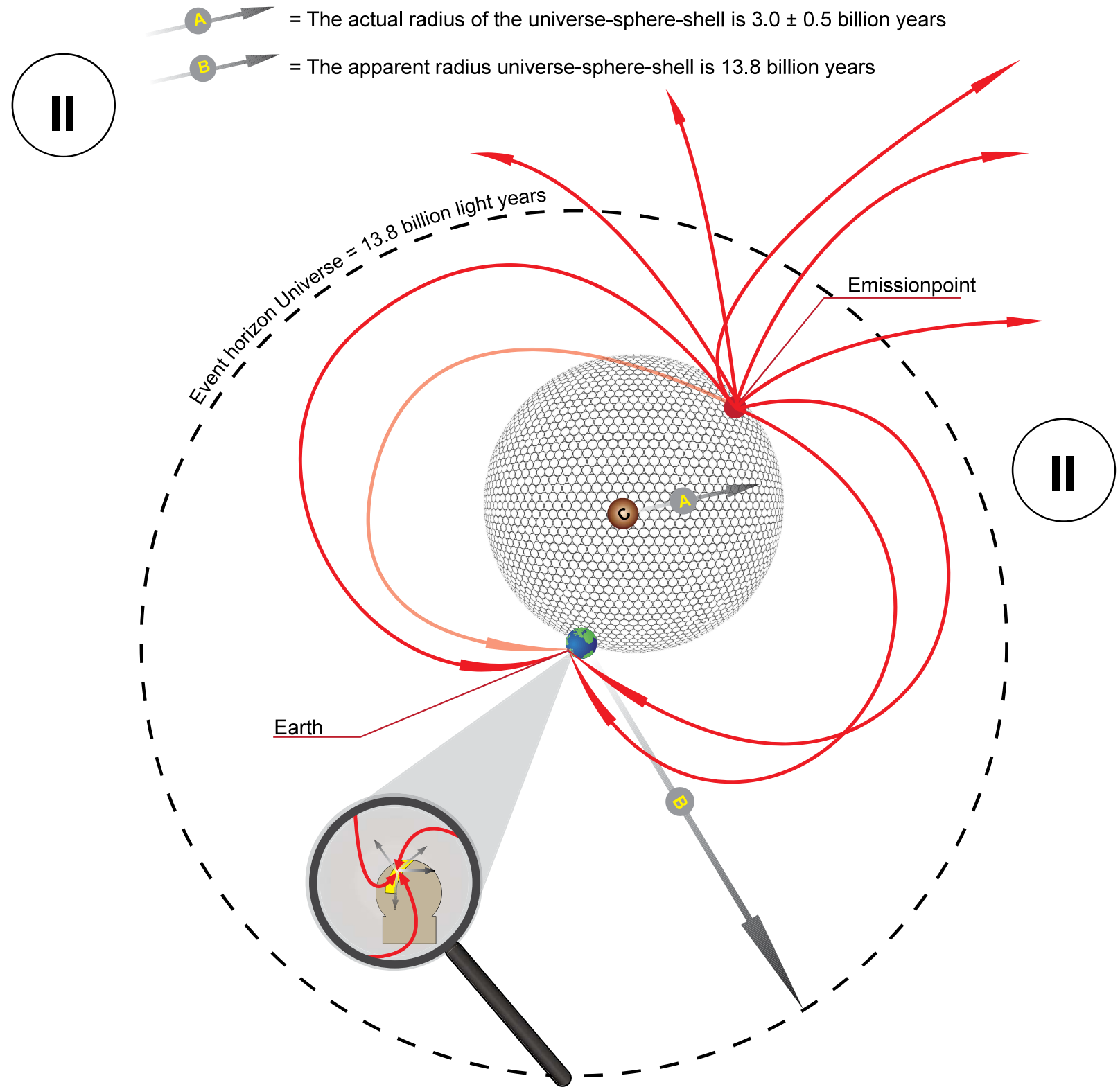
Explanation: **Phases 16 to 24 of the cycle of the universe:**

- 1) In **Case II** the emitted neutrino's and photons have kinetic energy and exist infinite. Electromagnetic radiation isn't transferred back into protons and electrons as shown in the previous **figures 72 and 73** nor transferred into hydrogen on a long term.
- 2) **Case II** assumes that all forms of electromagnetic radiation (neutrinos and photons) and all sub-atomic particles behave very weakly as electrical dipoles and magnetic quadrupoles close to zero. The measured mass, charge and gravity is zero. See **documents F1a 2014, F1b and E4, E3-1 and E4** www.uiterwijkwinkel.eu .
- 3) All the stars, including black holes and galaxies generate electric-, magnetic- and gravitational-fields around them. These magnetic and electrical fields provide minimal deflection in the straight lines of all neutrino's and photons through the universe. This results in a very small deviation of all kinds of electromagnetic radiations of, on average, only about one degree every 10 to 40 millennia!
- 4) The radiation also gets refracted when passing through different optical densities like gasses and liquids. In the universe-spherical-shell an extreme low concentration of hydrogen is present as remnant of the super cold (0 kelvin!) **Little Bang (G6)** and start of this universe some 40 – 45 billion year ago. Within all galaxies hydrogen as well helium is present as remnant of the **Big Bangs** and start of all galaxies some 20 – 25 billion year ago. (**Phase 16 cycle of the universe; see Figures 42 – 54 G8**)
- 5) Due to the extremely low average deflection of only one degree every 10 to 40 thousand light-years, all neutrinos and photons pass through spiral orbits rather than pure straight lines. For the time being, it is assumed that these coils have a radius of 0.4 to 0.6 million light years and a pitch of 2 to 3 million light years.
- 6) In one cycle the neutrinos, photons and sub-atomic particles move over a distance of 24 to 36 million light-years while, net, only a distance of 2 to 3 million light years is bridged.
- 7) In this **Case II**, the diameter of the universe is approximately five times smaller than what was being observed and thought in 2017. This results in a universe-spherical-shell (universe balloon) with a radius of about 3.0 to 3.5 billion light years instead the now thought and observed expanding universe with a radius of 13.8 billion light years!
- 8) The universe is much smaller than we thought in 2017. The universe is still an open system. In **Case II** the majority of the neutrinos and photons will leave the universe-spherical-shell forever. The universe-spherical-shell (USS) then widely leaks mass, matter, charge, spin and kinetic energy.
- 9) The cycle of the universe would be a finite process that will stop sooner or later! Therefore, **Case II** seems highly unlikely as well.

Figure 75a) Case III: A far reaching open universe within 13.8 billion light year.
All electromagnetic radiation in curved spirals till far beyond the universe-spherical-shell.
The universe / universe-spherical-shell (USS) continuously loses mass, matter, charge, spin and kinetic energy.

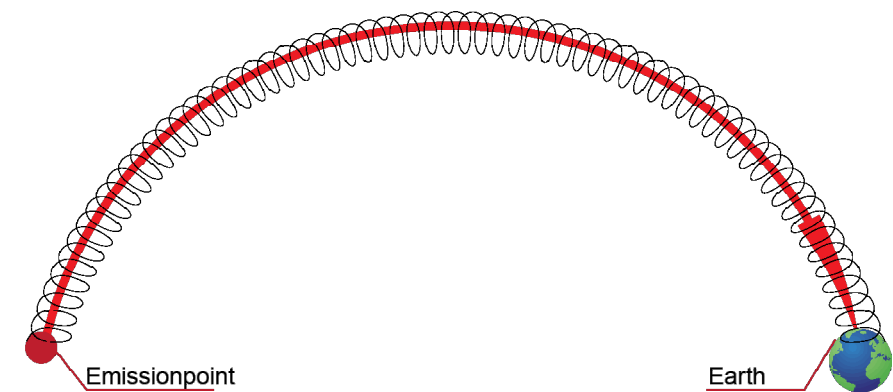


All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise



Explanation: **Phases 16 to 24 of the cycle of the universe**

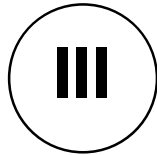
- 1) The neutrinos, photons, and sub-atomic radiation run in coils deflected by
 - a) electric and magnetic fields which are present everywhere within the galaxies and within the universe-spherical-shell and
 - b) extreme low concentrations of hydrogen and helium in the universe-spherical-shell and universe as well.
- 2) The inter-galactic spherical space between the galaxies may be only less than a lightyear thick with a minimal amount of pure gaseous and liquid hydrogen. Within the universe-spherical-shell the galaxies are thousands of light years thick. The interstellar matter in the galaxies contain, next to hydrogen, also helium and other gaseous molecules. In fact the universe-spherical-shell acts like a very imperfect construction of optical lenses.
- 3) The orbits of all the neutrinos, photons, and sub-atomic particles are deflected in such a way that the radiation, to a large extent, does not always continue to move within this universe-spherical-shell. The *main part of the neutrinos and photons* will, however, get out of the universe-spherical-shell and escape its electric and magnetic fields and finally disappear into infinite nothingness. A *small portion* of the radiation remains moving within the universe-spherical-shell (USS) by hopping from galaxy to galaxy.
- 4) The by stars and supernovae emitted neutrino's and photons exist infinite and aren't transferred back into protons and electrons as shown in the previous **figures 72 and 73** nor transferred into hydrogen.
- 5) At each cycle, the loose of neutrinos and photons results in the net loose of a large amount of mass, matter, charge, spin and kinetic energy. Then the universe will deflate in time!
- 6) The number of cycles of this universe is finite. Presumably, there is only one cycle possible. Therefore, **Case III** is not possible either.






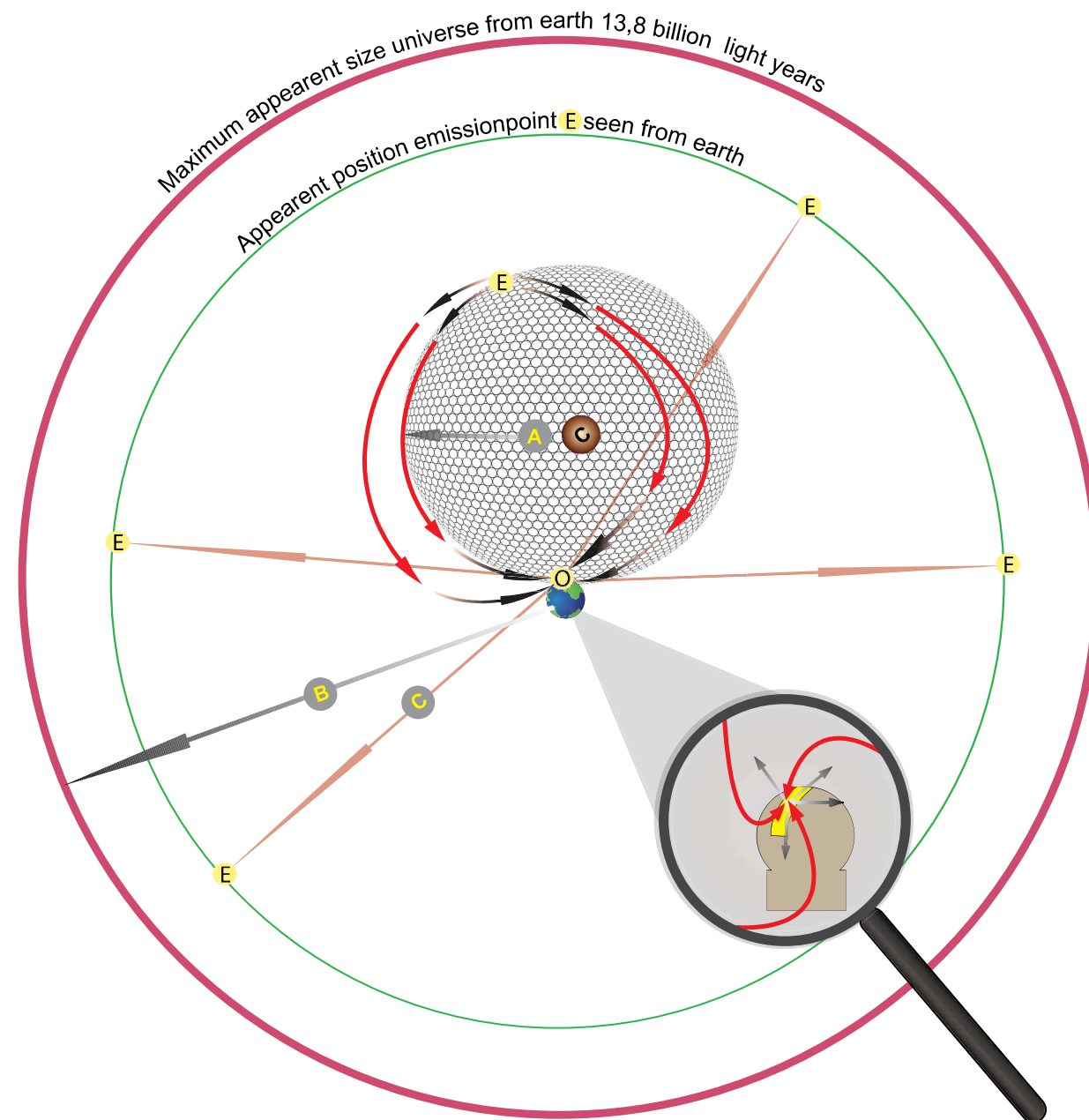
**Figure 75b) Case III: An open universe within 13.8 billion light years.
No transformation yet of emitted neutrino's and photons into protons, electrons and hydrogen.**



All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise



-  = The actual radius of the universe-sphere-shell is 3.0 ± 0.5 billion years
-  = The apparent radius universe-sphere-shell is 13.8 billion years
-  = Apparent position of the emission point on the universe-sphere-shell (± 10 billion light years).



Explanation: **Phases 16 to 24 of the cycle of the universe**




- 1) In **Figure 75b** only four orbits have been drawn from one random single emission point within the universe-spherical-shell (USS) in one of the 4 to 20 billion (10^9) galaxies. In reality each single emission point on Earth will result in many more (about 10 to 20 or more) erratic orbits and routes inside and outside the universe-spherical-shell (USS) that move completely through the universe.
- 2) From Earth, we see every single object in the deep universe in at least 10 – 20 times and at different positions in the sky (see enlargement). In that enlargement only four lanes of tenth of possibilities of one emission point have been drawn.
- 3) We may observe one and the same object in the deep universe 10 to 20 times or even more at different locations and even with different time intervals (days - years). This results in a significant double counting of galaxies in the universe. This has severe effects on the mass-, matter-, and energy balances of the universe.

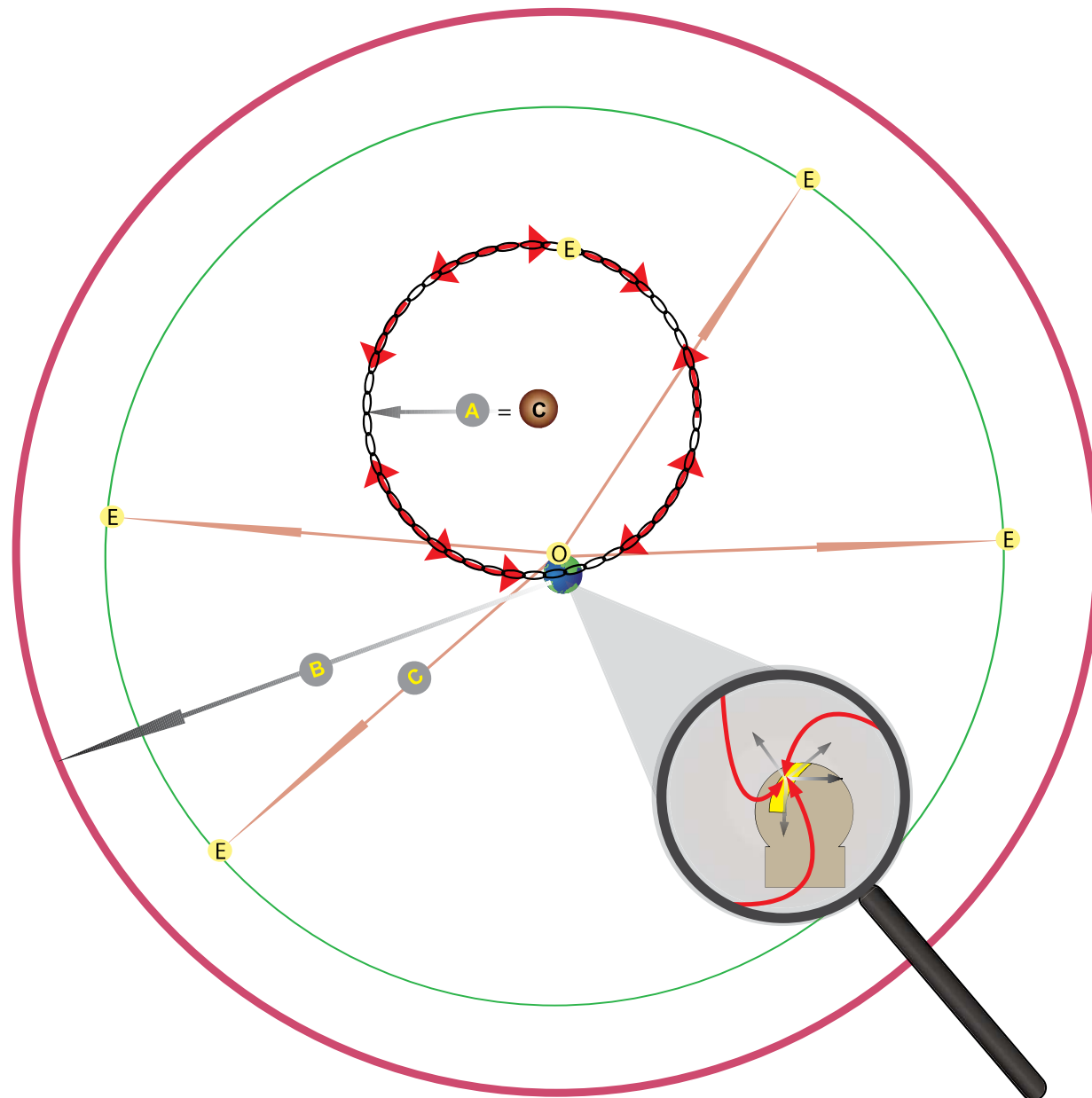
Figure 76) Case IV: A completely closed universe spherical shell with a radius of 3.0 ± 0.5 billion light years. Except gravity and time all other forms of radiation moves completely within the universe-spherical-shell (USS). No transformation yet of emitted neutrino's and photons into protons, electrons and hydrogen.



All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise

IV

-  = The actual radius of the universe-sphere-shell is 3.0 ± 0.5 billion years
-  = The apparent radius universe-sphere-shell is 13.8 billion years
-  = Apparent position of the emission point on the universe-sphere-shell (± 10 billion light years).



Explanation: Phases 16 to 24 of the cycle of the universe

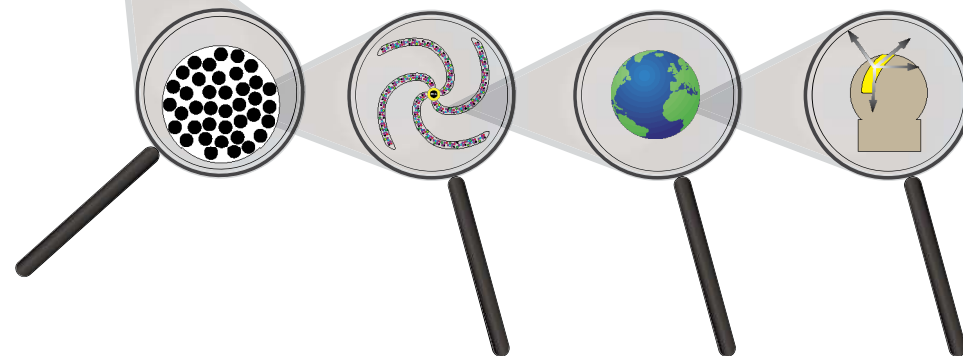
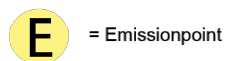
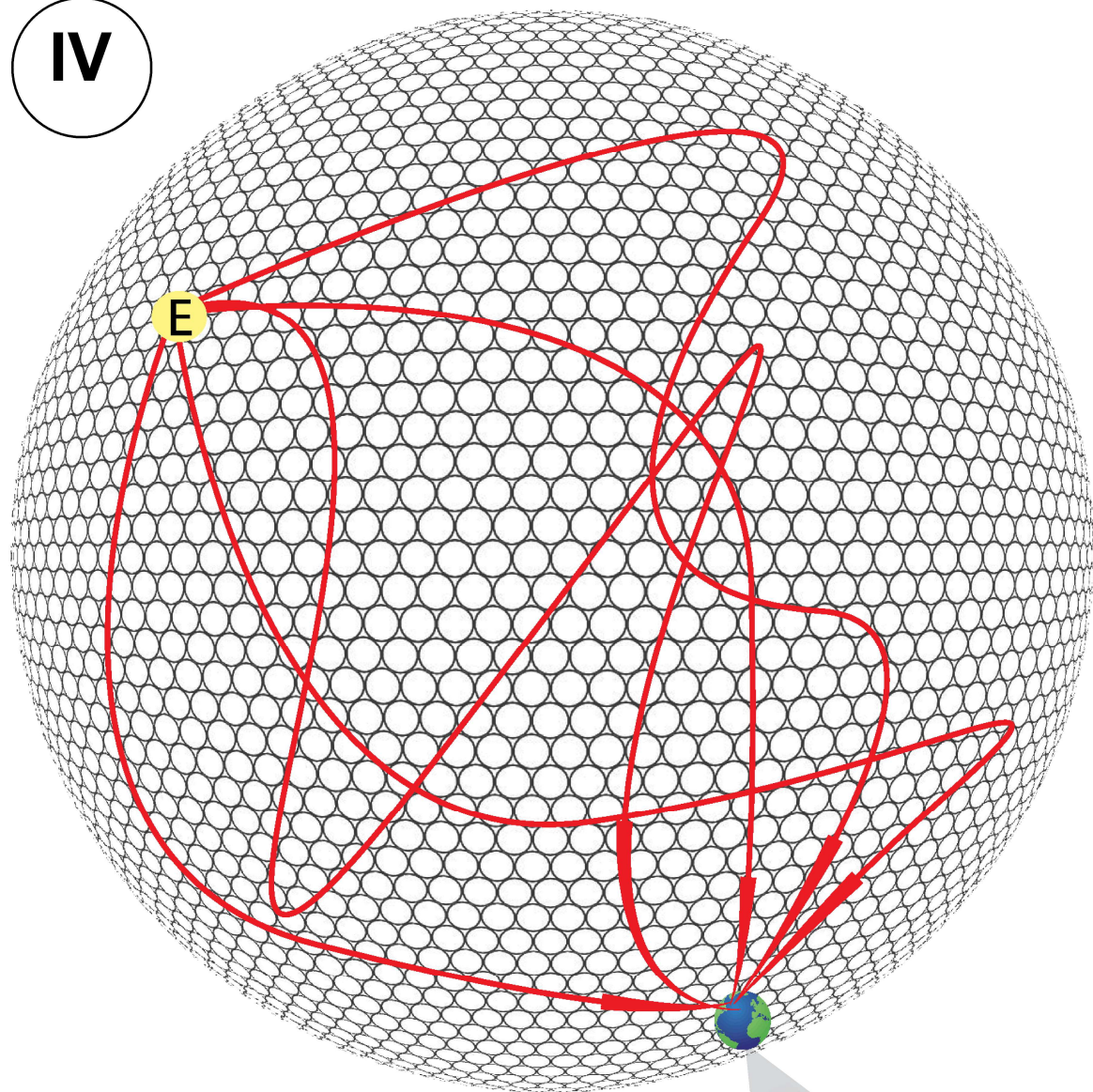
- 1) Outside the *universe-spherical-shell* the concentration of hydrogen and helium is absolute zero. All species of electromagnetic radiation cannot cross this area absolutely without matter. Electromagnetic radiation only able to cross the inter galactic space if matter such as atoms and molecules is present even in extreme low concentrations.
- 2) Thus electromagnetic radiation and shockwaves of gravitational energy (LIGO) cannot cross the absolute matter less area inside as well outside the universe-spherical-shell (USS). In **Case IV** the universe is a completely closed system for mass, matter, charge, spin and kinetic energy!
- 3) Only in the universe-spherical-shell (USS) extreme low concentrations of hydrogen gas are present. Within the galaxies extreme low concentrations of hydrogen and helium gas /liquid are present. This hydrogen and helium gas / liquid causes such minute deflections on the orbits of neutrinos, photons and particle radiation that now they move 100% within the *universe-spherical-shell*.
- 4) Due to this deflection the universe-spherical-shell (USS), in practice, acts like a kind of relative thin 'sphere of fiberglass' of hydrogen and helium. Within this sphere all neutrinos, all the photons of light and infra-red radiation, and any particular matter are kept captive completely. In fact now the USS is a completely closed system from which no form of mass, matter, charge, spin and energy can escape!
- 5) In fact the universe-spherical-shell acts like a very perfect construction of optical 'fiberglass' and optical galaxy lenses!
- 6) The universe and universe-spherical-shell is only an open system regarding a) 'radiation' of gravity and b) (universe clock) time. Both phenomena however are without any form of mass, matter, charge, spin, and kinetic energy. Time and gravity leave the universe-spherical-shell 100% as soon as they are generated. Both phenomena disappear with infinitive speed!
- 7) The remaining radiation of neutrinos, photons, and sub-atomic particles spiral over billions of years and will continue their orbit through the universe-spherical-shell (USS) of galaxy lenses until this radiation is absorbed by or has been transformed back into matter like protons, electrons and hydrogen.
- 8) In **Figure 76** all orbits move within the universe-spherical-shell starting in one of the 4 to 20 billion (10^9) galaxies. In reality, all objects can be seen about 10 to 20 or more different orbits and via different routes. They all move completely through and within the 'fiberglass' universe-spherical-shell and its existing galaxy lenses.
- 9) The current universe-spherical-shell of galaxies cannot be observed. The USS is a factor of five times smaller (radius 3.0 to 3.5 billion light years) than what was assumed in 2017. From Earth this virtual radius of the universe seems to be 13.8 billion light years.

Figure 76a) Case IV: A completely closed universe spherical shell with a radius of 3.0 ± 0.5 billion light years. Except gravity and time all other forms of radiation moves completely within the universe-spherical-shell (USS). No transformation yet of emitted neutrino's and photons into protons, electrons and hydrogen.



All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise

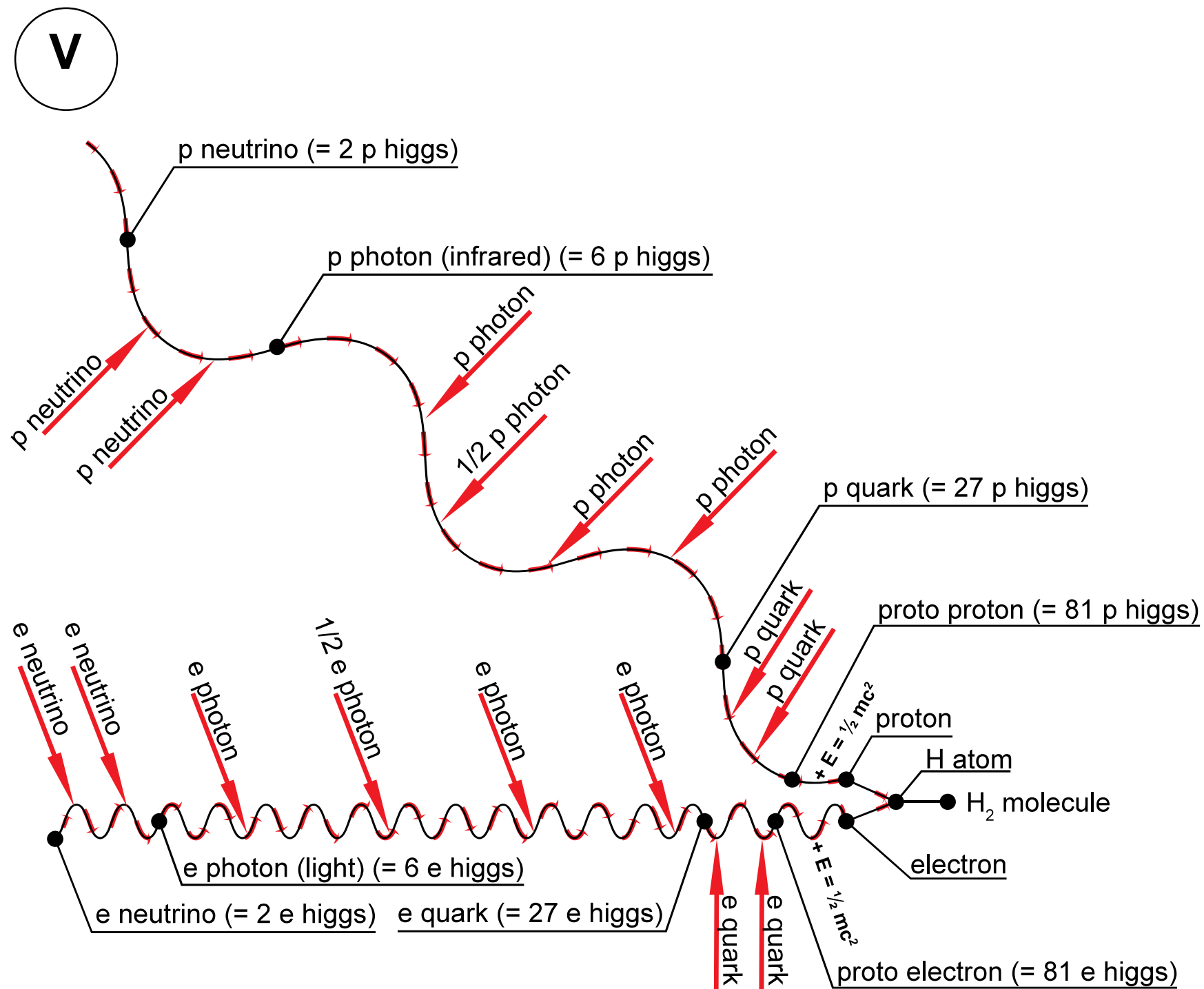
IV



Explanation: Phases 16 to 24 of the cycle of the universe

- 1) All forms of radiation with their mass, matter, charge, spin and energy remain completely within the universe-spherical-shell (USS). This USS is a completely closed system. No form of mass, matter and kinetic energy can escape.
- 2) The universe-spherical-shell can be regarded as a relatively thin 'fiberglass sphere' together with billions of optical lenses by galaxies. Within this system all neutrinos, photons of light and infra-red radiation, and all particular matter move around and stay 100% trapped.
- 3) The radiation from distant objects reach the Earth via various orbits. We observe every object from earth in different positions in the firmament with mutual time differences of sometimes a few days and even years. This structure of the universe-spherical-shell generates a lot of double counting.
- 4) **Figure 76a** shows only some lanes drawn from a random emission points within the universe-spherical-shell in one of the 4 to 20 million facet areas and 4 – 20 billion galaxies. In reality, it involves much more (about 10 to 20 or more) erratic orbits which all run entirely within the universe-spherical-shell and pass through the present galaxy lenses.
- 5) The universe is a factor five times smaller (radius universe-spherical-shell is about 3.0 to 3.5 billion light years) than assumed in 2017 (radius universe is 13.8 billion light-years). The universe is observed by astronomers based on virtual images that are provided through the universe-spherical-shell.
- 6) In **Figure 76a** all orbits move within the universe-spherical-shell starting in one of the 4 to 20 billion (10^9) galaxies. In reality, all objects can be seen about 10 to 20 or more different orbits and routes. They all move completely through and within the 'fiberglass' universe-spherical-shell and corrected by the billions of galaxy lenses.
- 7) Due to the slight deflection, the universe-spherical-shell generates beautiful images of the deep universe. These splendid images are not real images but virtual images. In reality, the observed objects are, on a whole, in other places than observed on Earth.
- 8) The current universe-spherical-shell of galaxies cannot be observed. The universe-spherical-shell is a factor of five times smaller (radius 3.0 to 3.5 billion light years) than what was assumed in 2017. However from Earth this virtual radius of the universe seems to be 13.8 billion light years!
- 9) As a result of the deflection and virtual images, *the universe is not a still faster expanding system* but, because of gravity even a *still slower expanding universe-spherical-shell!!!* Exactly the opposite we observe on earth!
- 10) This expansion of the universe will end in about 350 to 450 billion years. Then all expansion energy is transformed into the increasing angular speed of a) the remaining galaxies, b) the central black holes and finally c) the central facet black holes. In **phase 25** under the influence of gravity the universe will start shrinking in the direction of the **center C** without Big Crunch.

Figure 77: Case V: Recycling of mass, charge, spin and kinetic energy. Reconstruction of protons, electrons and hydrogen out of neutrinos and photons within 13.8 billion year. Limitation event horizon universe / USS.



Explanation: Phases 16 to 24 of the cycle of the universe

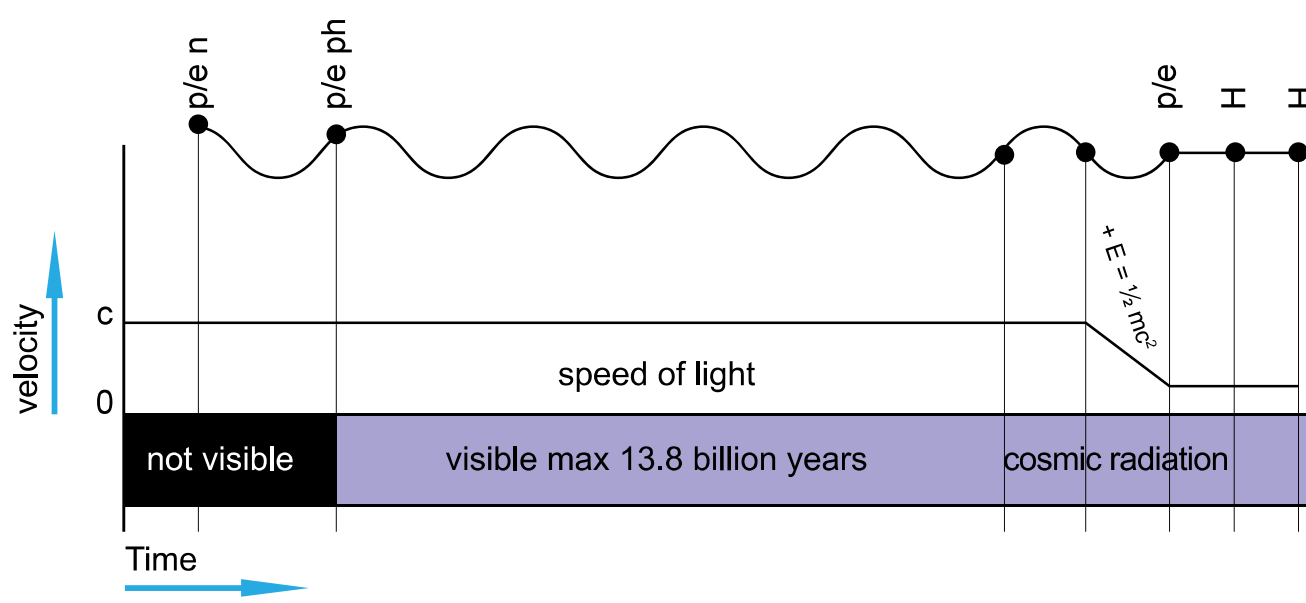
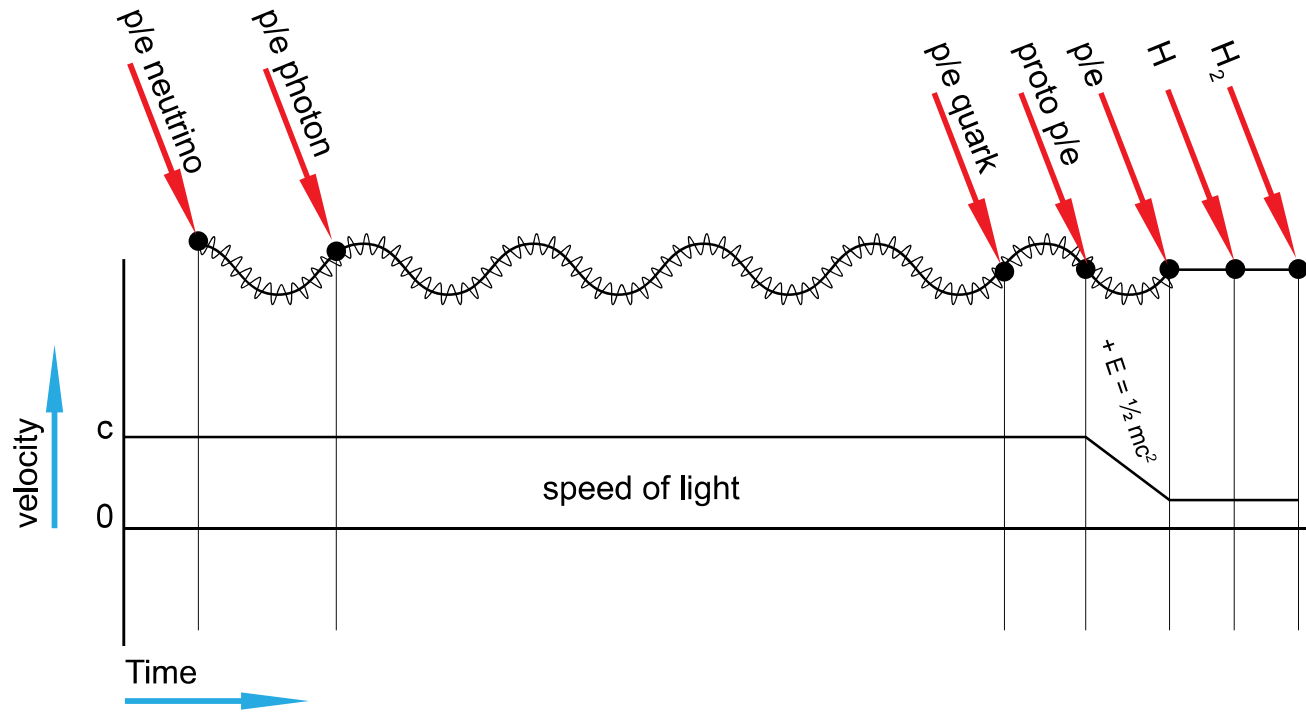
- 1) Stars and supernovae emit huge quantities of neutrinos and photons. The universe (USS) should be extremely hot and brilliant! In contrary the universe in reality is very dark and extremely cold with a temperature near 2.7 degrees kelvin! So neutrinos and photons disappear! Where are these neutrinos and photons now and what happened with them in universe?
- 2) In **Case V** all by stars and supernovae emitted neutrinos and photons (**Document F1b**) move and stay 100% inside the universe-spherical-shell where they collide with each other and form larger constructions. All emitted neutrinos, electromagnetic radiation and particle radiation are now transformed into 1) quarks, 2) proto-protons and proto-electrons and 3) protons (**Figure 72**) and electrons (**Figure 73**). See **Document F1c** www.uiterwijkwinkel.eu .
- 3) These out of electromagnetic radiation reconstructed protons and electrons are 100% transformed into hydrogen atoms / molecules. Within a period of 14 -18 billion year all neutrinos and photons are 100% reconstructed to protons and electrons and hydrogen. No neutrino or photon can escape this process All neutrinos and photons disappear again!
- 4) The **Figures 72 , 73 and 77** show this process as well the transformation of mass to mass with the phenomenon of matter by adding $E = \frac{1}{2} mc^2$ kinetic angular speed / energy. In fact these **Figures 72, 73 and 77** in reality describe **Einstein's $E = mc^2$** .
- 5) This reconstruction process results exclusively into protons, electrons and hydrogen! In the universe / USS brand new hydrogen is generated. This process results in the formation of millions new stars within the existing galaxies!
- 6) This reconstruction process of protons, electrons and hydrogen however limits our event-horizon in the universe to a maximum of about 14 billion light year! The current universe however is much older than the 13.8 billion year we can observe. Our universe yet is at least 40 – 45 billion year old. Because all photons older than 14 – 18 billion year are disappeared we never will be able to observe this forgoing period of the universe!
- 7) The author derived and described this forgoing period in his **Documents G6, G7 and G8** www.uiterwijkwinkel.eu because the energy-neutral cycle of the universe meets the *min / max 1 principle* as described in his **Document F1f**.

Figure 77a) Case V with:

- 1) A 100% closed universe and universe-spherical-shell,
 - 2) All emitted neutrino's and photons are transferred into protons, electrons and finally into hydrogen and new stars.
- The maximum event horizon universe is 13.8 billion light year.



V



Explanation: Phases 16 to 24 of the cycle of the universe:

- 1) The universe-spherical-shell consists out of a rather thin 'fiberglass' consisting of a) super cold pure hydrogen between the galaxies and b)'galaxy lenses' of a super cold mix of hydrogen and helium!
- 2) Within a period of 14 -18 billion year all neutrinos and all photons are reconstructed into proto-protons and proto-electrons (**Document F1c and Figures 72, 73 and 77 of G8**). By adding $E = \frac{1}{2} mc^2$ kinetic angular speed / energy these proto-protons and proto-electron transform into protons, electrons and finally into hydrogen.
- 3) In the long period the speed of neutrons / photons decreases from the speed of light down to some hundreds of km/s and brand new hydrogen is generated. This results in the formation of millions of new stars within the existing galaxies.
- 4) This process indicates that all *information* from the universe / universe-spherical-shell older than 14 to 18 billion years, has been 100% transformed back into protons, electrons and hydrogen. All older information in the universe / USS is deleted 100% and forever.
- 5) From Earth we cannot look father and deeper into this optical universe / universe-spherical-shell than 13,8 billion lightyear! We cannot observe the whole universe / USS; only a small part of the universe / USS! At that utmost point however we observe already fully developed galaxies that are billions of years old. It takes at least 10 - 20 billion year to realize such galaxies.
- 6) The present universe has to be much older (about 25 to 30 billion years older!) than now thought in 2017: 13.8 billion years.
- 7) For mankind this period of 14 – 18 billion light years is our ultimate event-horizon of the universe. This will change our view on the universe and astrophysics dramatically.

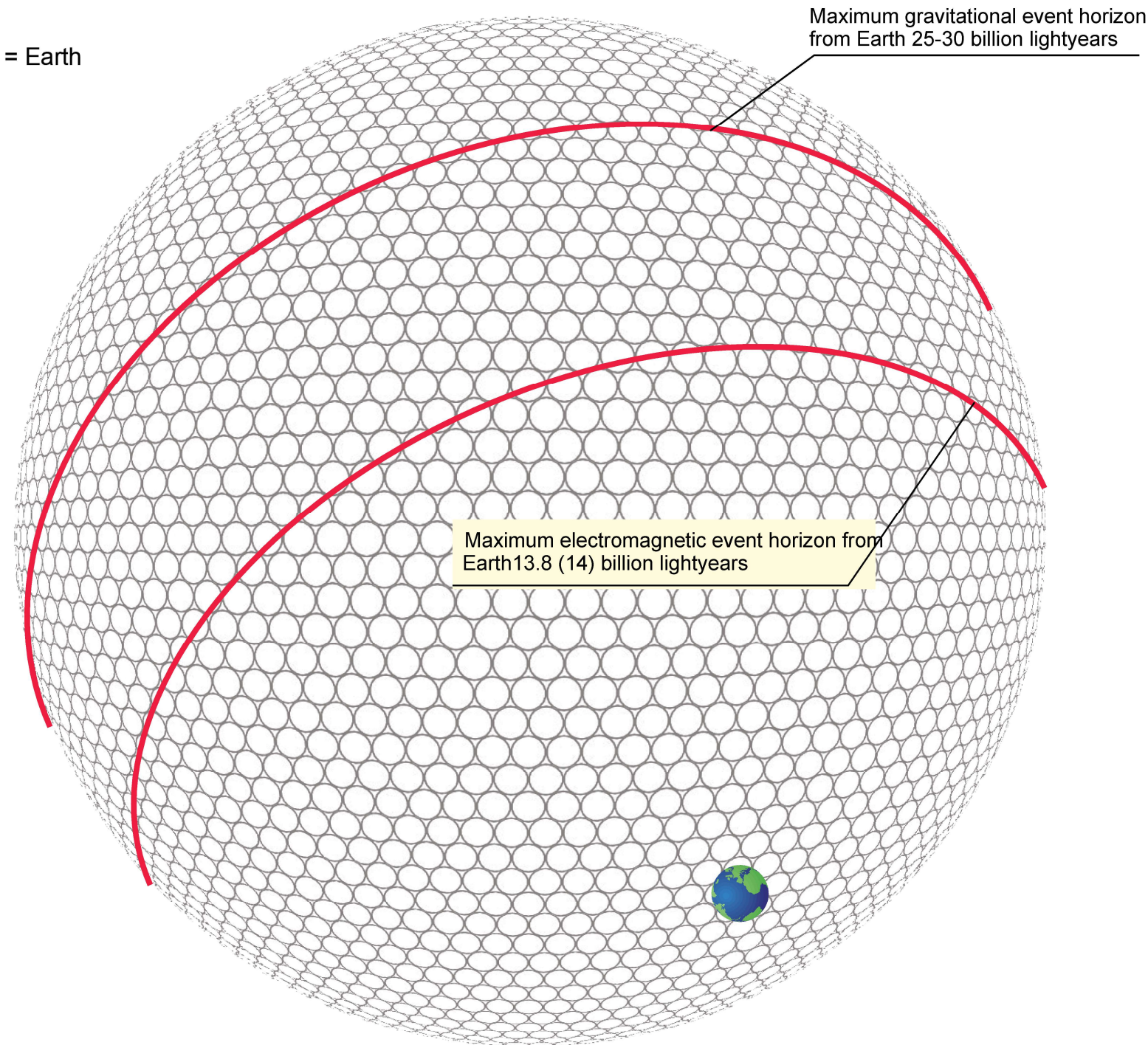
Figure 77c) The difference in 'event' horizon in the universe-spherical-shell (USS) with:
a) electromagnetic radiation versus
b) gravitational techniques:



All galaxies and central black holes rotate in the same direction; clockwise or anticlockwise



= Earth

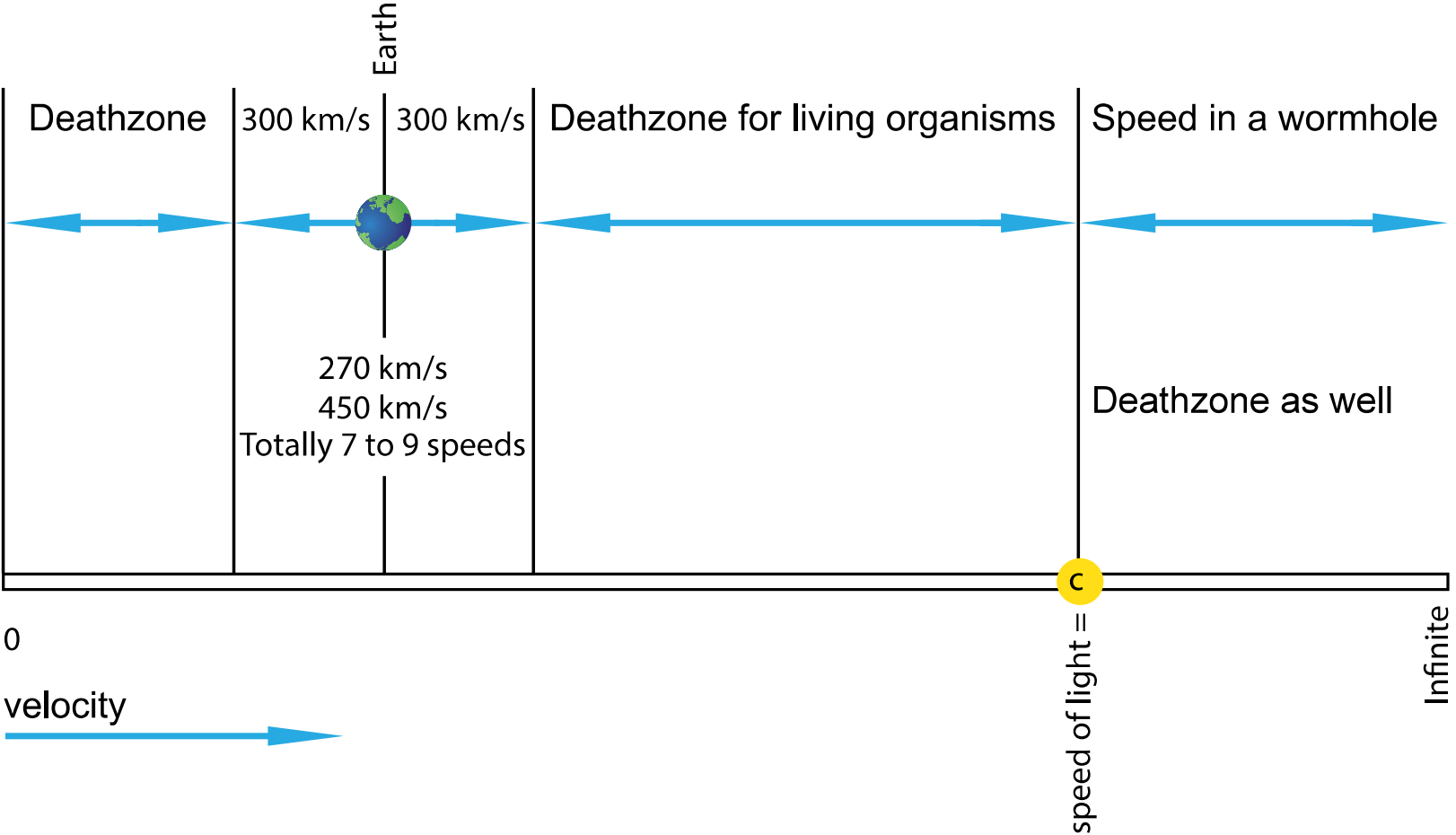


Explanation: Phases 10 to 24 of the cycle of the universe.

- 1) The universe, in fact thin universe-spherical-shell, in reality acts as a 100% closed system. See **Documents G6, G7 and G8**. All *electromagnetic radiation* and all *shockwaves of gravitational energy* (LIGO, VIRGO) are forced passing through the universe-spherical-shell (USS) filled with extremely low concentrations of hydrogen and helium.
- 2) During their journey within the universe-spherical-shell and along millions of stars and galaxies all radiation of neutrino's, photons and sub-atomic particles are forced passing through the hydrogen 'fiberglass' between galaxies and hydrogen / helium lenses of galaxies.
- 3) In a period of 14 – 18 billion years all electromagnetic radiation (neutrinos and photons) are transformed back into protons, electrons and finally into hydrogen and new stars. See **Figures 72, 73 and 77**. In time all neutrino and photon related information disappears completely!
- 4) With *techniques based at electromagnetic radiation* the maximum 'event' horizon is about 13.8 billion year! Our universe however is already 40 – 45 billion year old now!
- 5) We now live in **phase 23** of the cycle of the universe that started already some 15 - 20 billion year ago. Astronomers only can observe this **phase 23** and not even the first 2 – 7 billion years of **phase 23**! We cannot observe absolutely nothing of the previous **22 phases**!
- 6) In time shockwaves of *gravitational energy* however aren't transferred back into matter; they only become weaker! In theory these waves are present forever. The first collisions of hydrogen spheres and start of these shockwaves of gravitational energy began some 25 – 30 billion year ago starting in **phase 10** cycle of the universe.
- 7) At present our gravitational reach is 1 – 3 billion lightyear. Improving this gravitational technique (LIGO, VIRGO) a hundred to thousand times our gravitational 'event' horizon can be improved up to some 25 – 30 billion year! Twice the maximum 'event' horizon of light!
- 8) This improvement has profound implications to our view of the universe / USS and the cycle of the universe. It has consequences for religions and for the explanation of the origin of living matter.

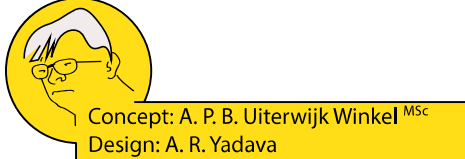
○ = Facet area containing 1-2 thousand galaxies

Figure 78: Effects of speed on atoms, molecules, proteins and DNA in living matter:
For human beings the maximum speed in universe relative to Earth is limited to about 300 km/s or 1 permille of the speed of light.



Explanation: Phases 16 to 24 of the cycle of the universe.

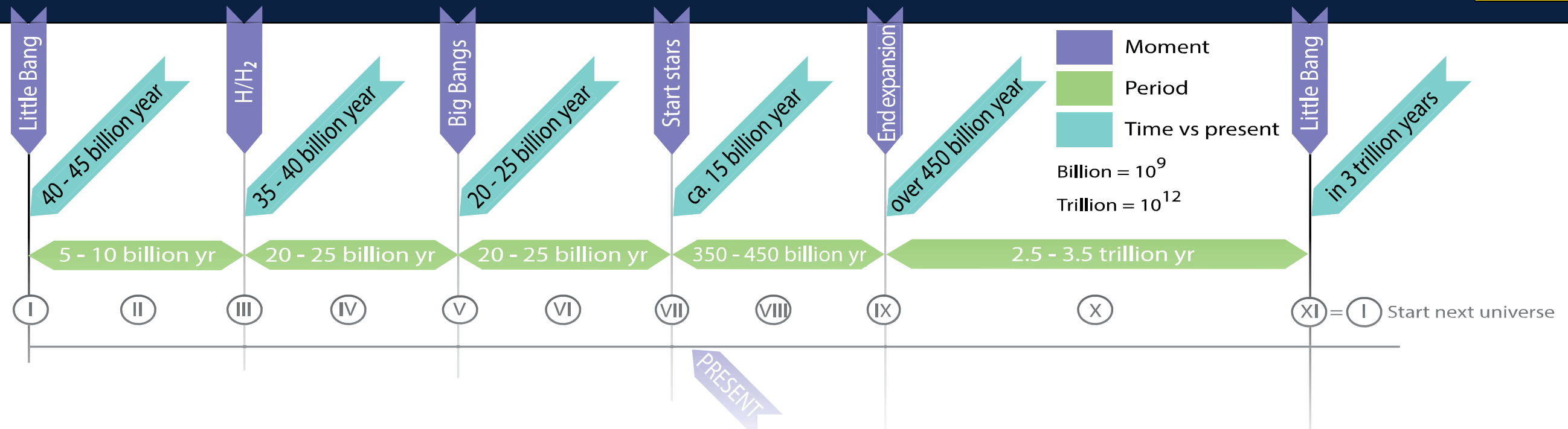
- 1) The Earth is now subjected to about 10 - 11 different speeds in the universe-spherical-shell such as a) the expansion speed (now about 450 km/s), b) the angular speed within the Milky Way galaxy (about 270 km/s) and c) different other speeds within our galaxy and those between the galaxies within the facet area. Which is the relationship between forces on atoms and bonds in molecules and speed in the universe?
- 2) The measured 11 dimensions at the Higgs / string / brane level is equal to this number of 10 – 11 speeds of all atoms on Earth in the universe / USS. All physically, chemically forces on atoms and gravity are emitted by the 'shell'-electrons of atoms because of speed of the atom in the USS. So gravity is a speed related force. See **E3, E3-1**.
- 3) These physically, chemically forces and gravity by the 'shell'-electrons of atoms are built up from 9 – 11 dimensions. See **document F1d**. What happens with physically, chemically bonds?
- 2) **Case A:** All speeds of the Earth / spacecraft in the universe **decreases towards zero**. In **Case A** all physically, chemically forces of the 'shell'-electrons of atoms and gravity will decrease towards zero as well. All molecules such as proteins, DNA will fall apart first in their mono-molecules and finally even into their atoms. Gravity will be zero. With decreasing speed in USS relative to Earth all living matter will die sooner or later. (All atoms remain stabile structures)
- 3) **Case B:** The speed of a spacecraft in the universe **increases towards the speed of light**. Than all physically, chemically forces of atoms (quadratic) and gravity (linear) will increase with speed of the atom in the USS. Molecules such as proteins and DNA will become completely fixed and cannot split anymore. With increasing speed all livings matter will die sooner or later.
- 4) The required stability of the hydrogen bridges in DNA and protein synthesis results in a speed limitation for **all living persons and plants relative to Earth**. That critical speed is limited to approximately 300 km/s or only one thousandth the speed of light! See **Documents B1 and B2** www.uitervijkwinkel.eu.
- 5) At higher or lower speeds in the universe relative to planet Earth this results in a malfunction of the DNA / RNA. The protein synthesis will be blocked as well. Death follows. Biochemically it is impossible to move faster though the universe relative to Earth than about 1 permille the speed of light!
- 6) Because that fundamental speed limitation it is impossible for mankind to reach the about hundred to thousand 'earthlike' planets around other stars elsewhere in the Milky Way galaxy! Then same for all aliens elsewhere in universe / USS!
- 7) In universe mankind literally is 100% captured on planet Earth! Escape isn't possible. Especially the last half century planet Earth has been plundered by humanity in the name of economic development. Planet Earth is completely worn out due to an immense overcrowding.
- 8) Humanity has to reduce towards less than 300 - 500 million human beings in order to survive on the long-term (200 – 300 year). That is the only possibility to reduce the negative aspects of mankind by 30 – 40 x and to acceptable level for the ecosystems on our planet on a long term (> 300 year) .



Figuur 79: Changes in energy dispartisation on most significant moments / periods cycle of the universe.

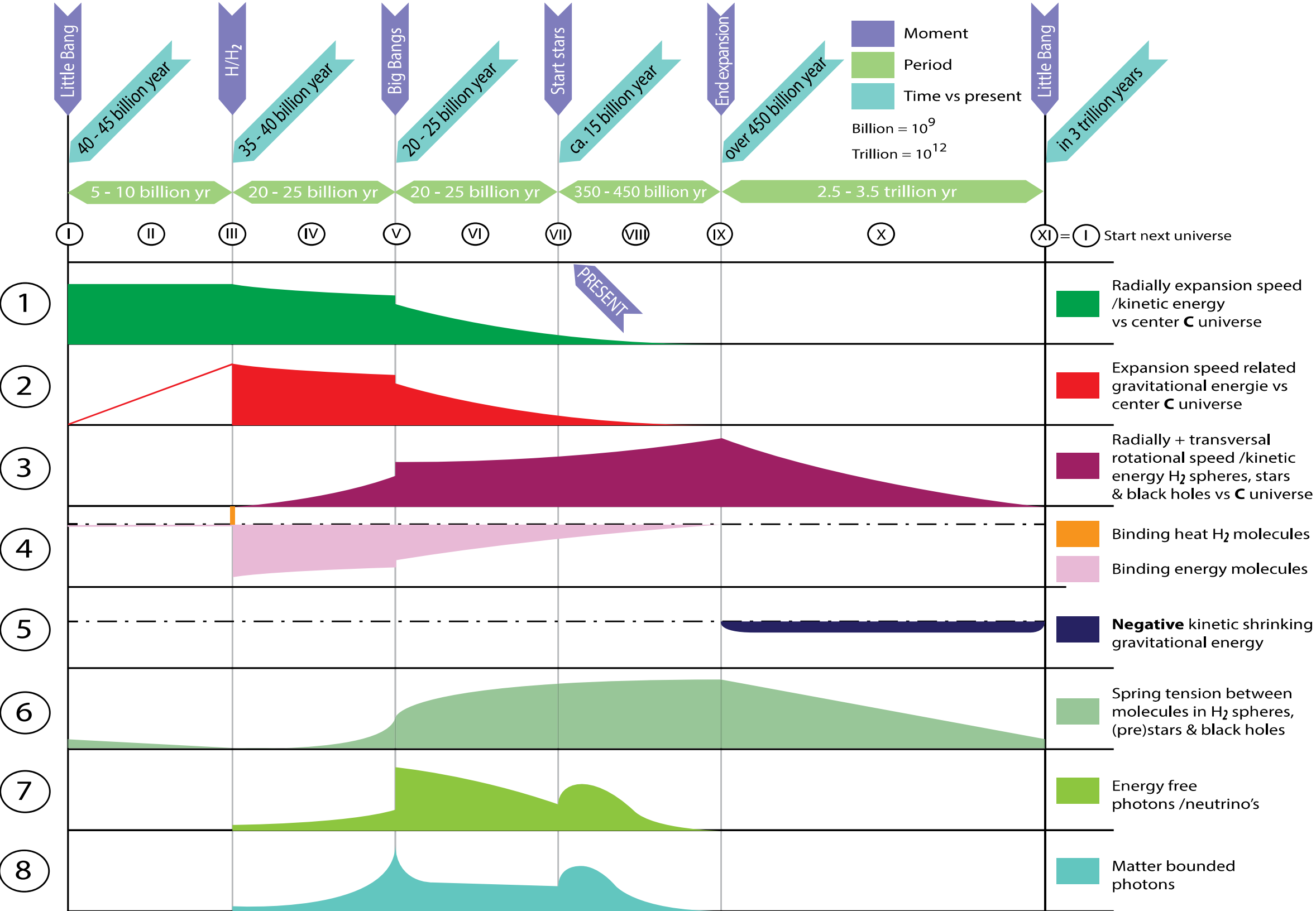
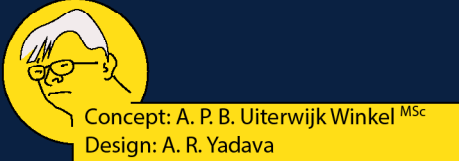


Concept: A. P. B. Uiterwijk Winkel MSc
Design: A. R. Yadava



- I) The moment when the universe begins from a king size Little Bang black hole with a radius of 50 – 100 million km with the center C of the universe exactly in the center. Due to the loss of velocity and associated gravitation this Little Bang black hole reached the Critical black hole gravity (Cribhgra) and became instable. This Little Bang took place at 0 degrees kelvin. All black hole atoms which were present disintegrated into an equal number of protons and electrons which arranged themselves in monolayers of protons and electrons.
- II) The period when the expanding of the universe-spherical -shell of mono-layers of protons / electrons is stationary at a 1/3 - 1/2th the speed of light c and for 5 - 10 billion (10^9) years.
- III) The moment when the hydrogen atom / molecule is formed. This caused the following to return to the universe:
 - a) gravity and gravitational energy relative to the center C of the universe,
 - b) the chemical covalent radical force and
 - c) the vanderwaals- / London-force.
- IV) During the formation of the universe-spherical-shell and the cooling of the hydrogen gas to the point of condensation, billions (10^9) of pure hydrogen spheres are generated by the gravitation which get bigger and hotter in time until fusion occurs spontaneously.
- V) The moment of synchronizing the 4 - 20 billion 'Big Bangs' and the start of every galaxy. The main part of the hydrogen is ejected as gas / plasma. In the center the central black hole of the galaxy is created.
- VI) The period of cooling down and the formation of 100 - 200 billion proto-stars per galaxy with their planets.
- VII) At this moment nuclear fusion starts in the 100 – 200 billion proto-stars per galaxy.
- VIII) The period with complete fusion of hydrogen in the formatted stars till atoms \geq beryllium, which can be absorbed by the central black hole.
- IX) The moment when the universe stops expanding. All the stars / planets of the galaxy and all the radiation emitted are in the form of black hole atoms confined to the *central black holes* in the galaxies.
- X) The period of the shrinking of the universe-spherical-shell which contains 4 - 20 billion *central black holes*. On the way to the Little Bang point /center C of the universe these start rotating slower around their axes. At the end, the Little Bang Black hole is formed.
- XI) The moment of the next Little Bang. The Little Bang black hole falls apart directly into protons and electrons.

Figure 79: Changes in energy dispartisation on most epical moments / periods cycle of the universe.



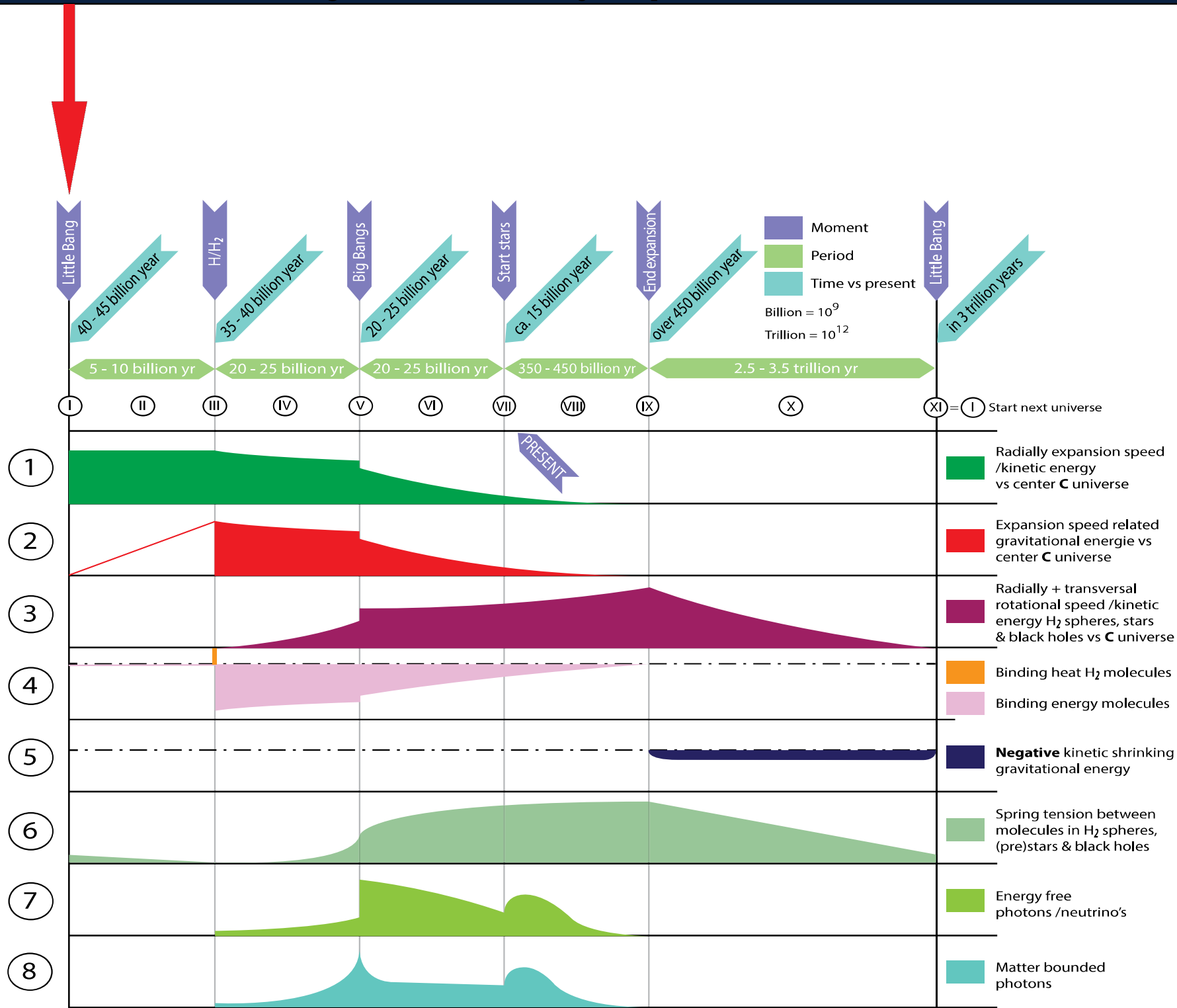
- Belangrijkste momenten in de heelalcyclus:**
- I =** Little Bang en start van dit heelal, 40 tot 45 miljard jaar geleden.
 - III =** Vorming waterstofatoom/molecuul + gravitatie & gravitatie-energie, 35 tot 40 miljard jaar geleden.
 - V =** Big Bangs en start vorming sterrenstelsels, 20 tot 25 miljard jaar geleden.
 - VII =** Start kernfusie in sterren, ca 15 miljard jaar geleden.
 - IX =** Einde uitdijing heelal en start inkrimpen heelal, over 400 tot 450 miljard jaar.
 - XI =** Einde van dit heelal met Little Bang en start van het volgende heelal, over 2,5 tot 3,0 biljoen jaar.

Figure 79 : I) The moment when the universe begins from a king size Little Bang black hole with a radius of 50 – 100 million km with the center C of the universe exactly in the center.

Due to the loss of velocity and associated gravitation this Little Bang black hole reached the Critical black hole gravity (Cribhgra) and became instable. This Little Bang took place at 0 degrees kelvin. All black hole atoms which were present disintegrated into an equal number of protons and electrons which arranged themselves in monolayers of protons and electrons.



Concept: A. P. B. Uiterwijk Winkel MSc
Design: A. R. Yadava



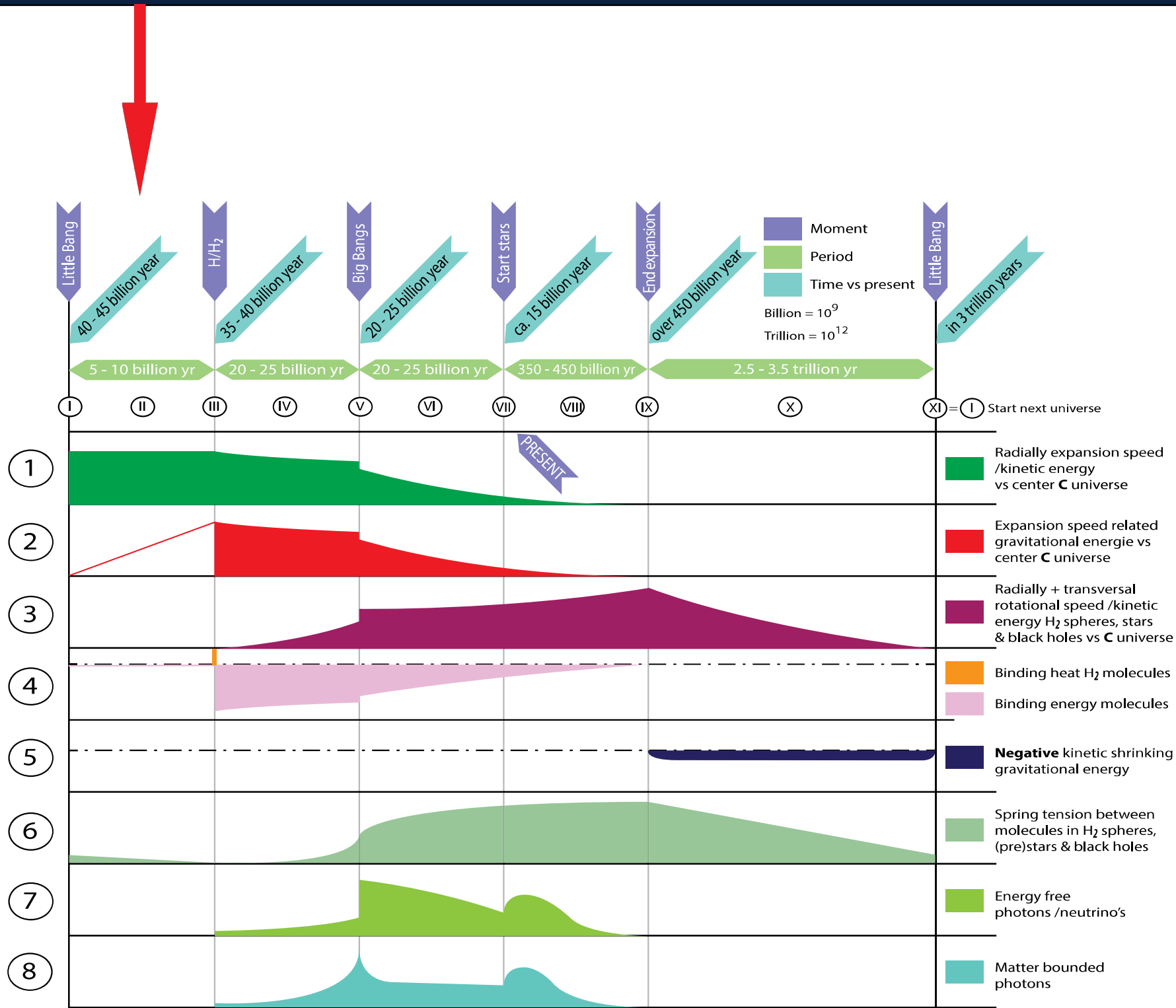
I) Moment of the Little Bang:

- 1) The Little Bang black hole is formed from approximately 4 to 20 billion smaller each of which is the remainder of several complete and current galaxies. The Little Bang black hole, which is not rotating anymore, has a perfect circular sphere with a radius of approx. 50 - 100 million km around the center (C) of the universe. Point C is, at most, a few centimeters in diameter.
- 2) In the resulting Little Bang black hole, the black hole atoms repel each other on all sides due to their negatively charged electron shells. Therefore, these black hole atoms, together, generate a huge omnidirectional electric spring tension / force.
- 3) The spring tension / spring force would cause the black hole to disintegrate but the gravity of the black hole prevents this from happening. Gravitation keeps the black-hole atoms packed together in the black hole.
- 4) In order to remain stable, the black hole must generate a minimal amount of gravity. The minimum amount of gravity is defined as the Critical black hole gravity (Cribhgra) and corresponds to the smallest possible black hole with a radius of 2 - 3 km which rotates around its own axis at 1/3 – 1/2th of the speed of light. Cribhgra is, in fact, a measurement for the minimum required amount of kinetic energy of black holes / compact celestial bodies.
- 5) To ensure the stability of black holes, their own gravitational energy should therefore always be greater than the Critical black hole gravity (Cribhgra). If not, the black hole will explode into protons and electrons.
- 6) The omnidirectional electric spring tension represents a large amount of spring energy that is released at the time of the Little Bang. This is the amount of kinetic energy that causes the expansion of the new universe.
- 7) In the final phase of the formation of the Little Bang black hole, the gravity decreases to such an extent that Cribhgra is reached everywhere and exactly at the same moment. The Little Bang starts everywhere and at exactly the same moment.
- 8) During the Little Bang, all black hole atoms are simultaneously divided into an equal number of protons and electrons. When the black hole atom disappears, gravity, temperature and other physical and chemical forces also disappear completely from the universe. Only the elementary electric charge and magnetic spin remain.
- 9) During the Little Bang, the protons and electrons organize themselves, through their elementary powers, in mono spherical-layers of one proton and one electron thick. If the atom is absent, the phenomenon of temperature is also absent. The Little Bang takes place at an equivalent of 0 Kelvin!
- 10) The radial expansion of the spherical-layers of protons / electrons starts as a result of the spring tension and at approximately 1/3 - 1/2 of the speed of light c. The new universe expands evenly on all sides from the center C in a universe-spherical-shell consisting of innumerable mono-spherical-shells of protons and electrons. In addition, the electrons move at approximately 2/3 of the speed of light c around the center C of the universe.
- 11) The remainder of the spring tension remains within the mono spherical-shells of protons and electrons. This spring tension in the spherical-shells causes the further expansion of the spherical-shell of the universe.
- 12) When the Little Bang occurs, the total amount of kinetic energy at the start of the universe is:

$$\text{kinetic total radially} = \frac{1}{2} \times \text{mass protons} \times (1/3 c)^2 + \frac{1}{2} \times \text{mass electrons} \times (1/3c)^2$$

$$\text{E kinetic total transversal} = \frac{1}{2} \times \text{mass electrons} \times (2/3 c)^2 + \text{Electric spring tension / energy within mono layers of protons} + \text{Electric spring tension within mono layers of electrons}$$

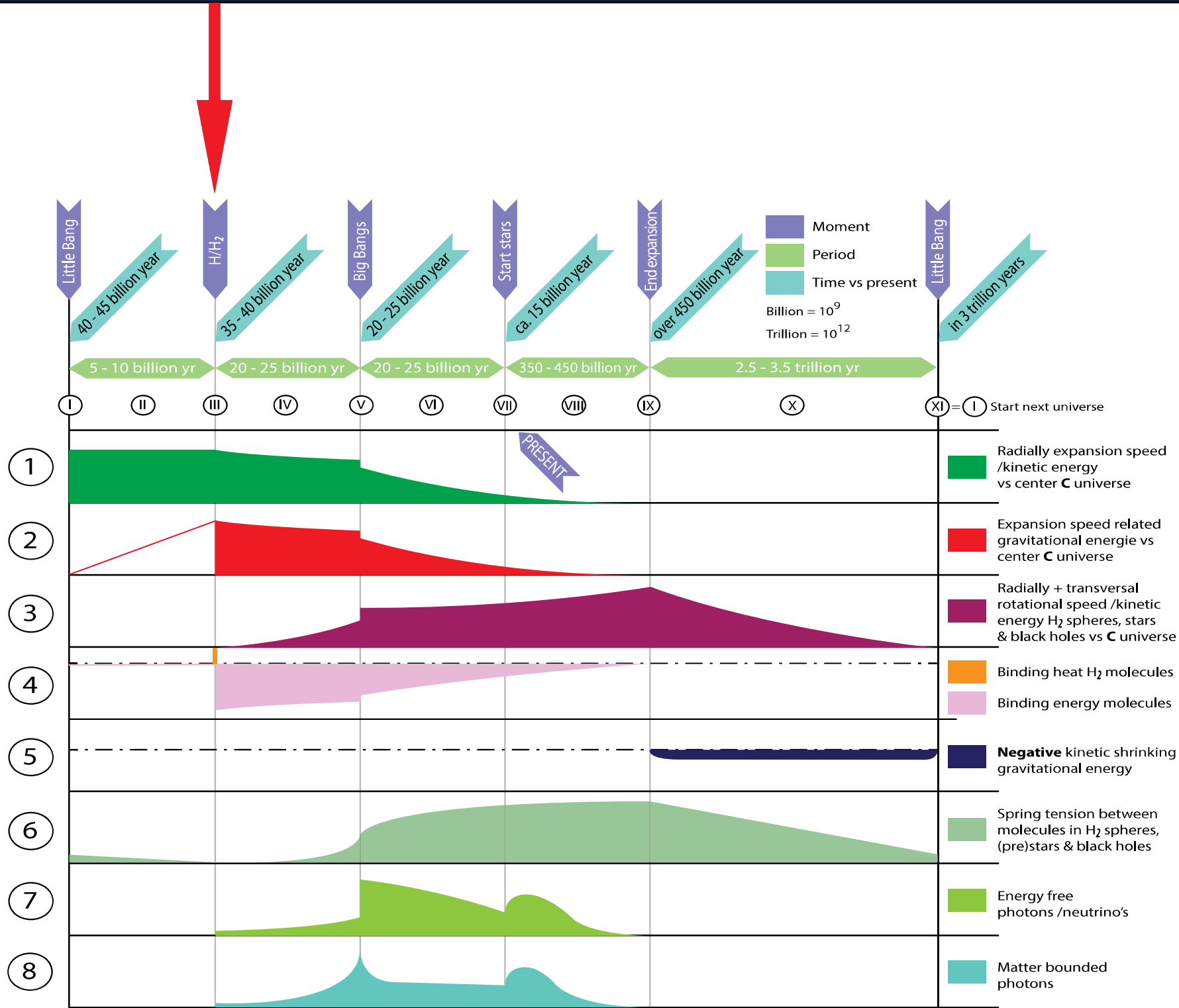
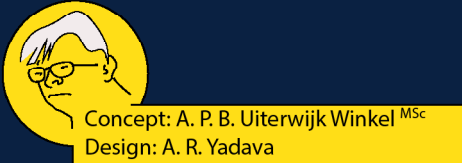
Figure 79 : II) The period of expansion of the universe-spherical-shell without gravity up to the formation of hydrogen atom.



II) The period of expansion of the universe-spherical-shell without gravity up to the formation of the hydrogen atom.

- 1) After the Little Bang, the former Little Bang black hole swells, at first, for about 1,300-1,500 at about 1/3 - 1/2 of the speed of light c, to a sphere composed of mono-layers of alternatively one proton and one electron thick. The former 'Little Bang black hole' swells, in this period, to a sphere with a radius of about 500-750 light-years. It is only after this period that a hollow occurs on the inside and creates an interior space surrounding C. The super cold Little Bang is completed. The universe then expands further as a spherical shell.
 - 2) The universe-spherical-shell continues to expand over a period of about 5 - 10 billion (10⁹) years at 1/3 - 1/2 of the speed of light c. Since the atom is absent, both gravitation (and hence gravitational energy) and temperature are absent. The expansion continues without any hindrance and without slowing down during 5 - 10 billion years!
 - 3) The expansion after the Little Bang takes place at 0 Kelvin and is not observable!
 - 4) During this period, the electrons, moving at 2/3 c around center C of the mono-spherical layers, transfer their kinetic energy to the protons extremely slowly. In addition, their transversal velocity decreases from 2/3th the speed of light to about 2.2 Mm/s. Due to the transfer of this energy to the protons, the expansion rate increases marginally by approximately 1 Mm/s.
 - 5) The speed of 2.2 Mm/s of the electron is equal to the speed of the 'shell' electron in the hydrogen atom.
 - 6) During this period of 5 - 10 billion years, while expanding, the distance between the layers of protons and electrons slowly increases into the distance in a hydrogen atom. This also applies to the protons within their own mono-spherical-shells. Thus, the spring tension continues to decrease.
 - 7) The expansion must extend in such a way that the mutual distance of the protons, within and between the mono spherical-layers of protons, increases to at least 2 x the dimensions within the hydrogen atom. This is necessary spatially in order to allow for the formation of the hydrogen atom.
 - 8) During the period of approximately 5 - 10 billion years, the universe-spherical-shell expands evenly, without gravity, over a distance of about 2 - 3 billion light-years.
 - 9) In this period gravitation is absent. The expansion of the universe is not at the expense of the expansion velocity! In this period gravitational energy is potentially being build up relative to the center C of the universe and is completely free.
 - 10) The gravitational energy is only affected when, with the hydrogen atom, both gravity and thus gravitational energy relative to C, return to the universe.
- Equations:**
- $$E \text{ kinetic total radially} = \frac{1}{2} \times \text{mass protons} \times (1/3 c)^2 + \frac{1}{2} \times \text{mass electrons} \times (1/3c)^2 +$$
- $$E \text{ kinetic total transversal} = \frac{1}{2} \times \text{mass electron mass} \times (2/3 c)^2 \rightarrow \frac{1}{2} \times \text{mass electrons} \times (2.2 \text{ Mm})^2$$
- + spring tension / energy inside the proton spherical-layers decreasing to zero
+ spring tension within the electron spherical-layers decreasing to zero

Figuur 79 : III) The moment of the formation of the hydrogen atom / molecule.



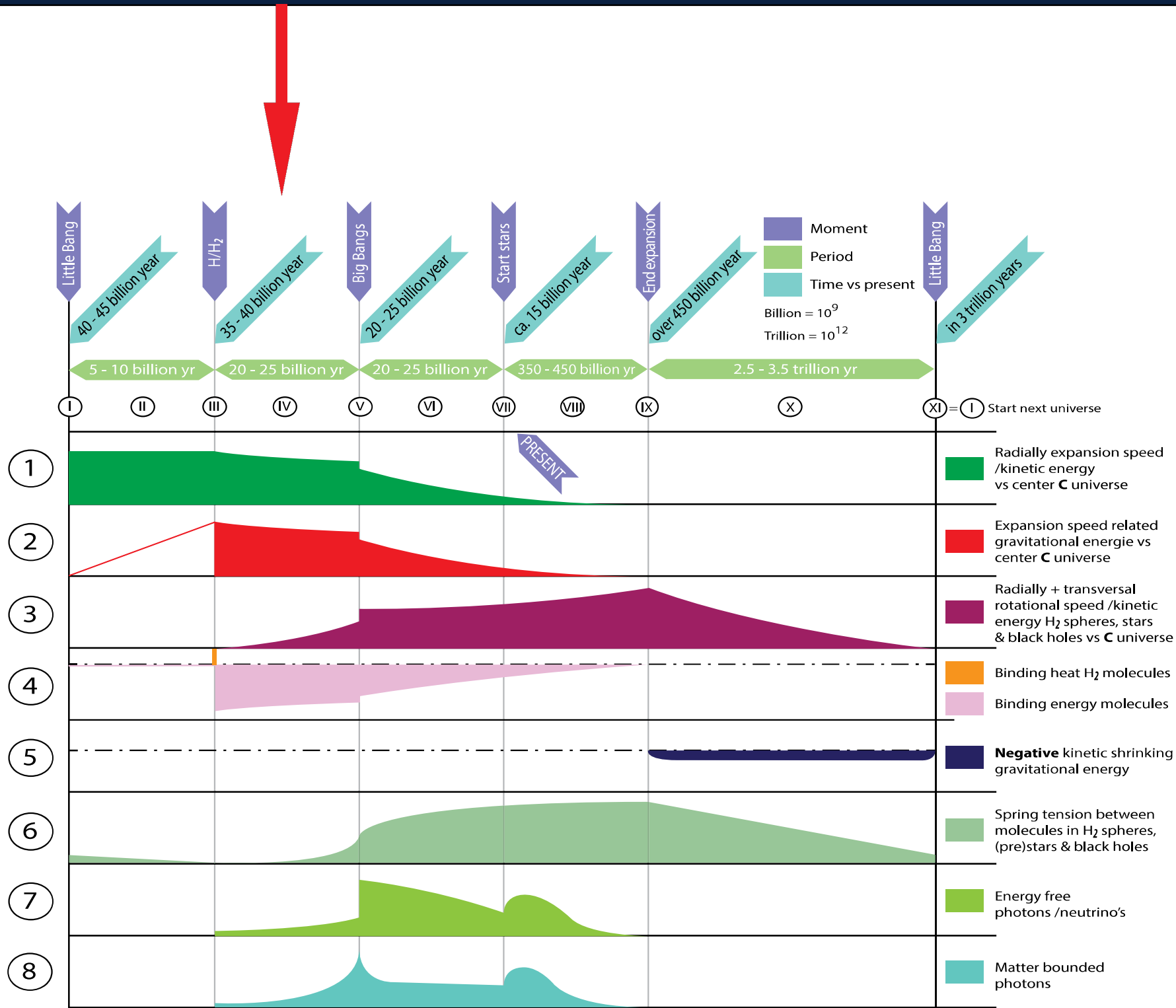
III) The moment of the formation of the hydrogen atom / molecule.

- 1) Approximately 5 - 10 billion (10⁹) years after the Little Bang, with an expansion rate of 1/3 - 1/2 c and at 0 kelvin, each proton captures its own 'shell' electron. This forms the hydrogen molecule.
- 2) The enormous expansion velocity of the universe creates a large deviation in relation to the ideal, pure circular path of the 'shell' electrons of hydrogen. To counter act this deviation the 'shell' electron generates gravity and thus, inherently, gravitational energy relative to the center C of the universe. In addition, these 'shell' electrons generate the chemical covalent radical force and temperature.
- 3) Due to the emergence of gravitation, a huge amount of free gravitational energy is effected relative to C, over a distance of about 2.5 - 3 billion light-years. This gravitational energy is added to the universe / the universe-spherical-shell from 'nothing'; see the pink area on **Figure 79**. This gravitational energy seems, practically, just as large as the total expansion energy.
- 4) Instinctively, this freely added gravitational energy of the universe goes against the grain of what great physicists believe. This means that the laws of conservation of energy and momentum do not apply on the scale of the universe! This free and additional gravitational energy explains the search for 'dark energy'. The Law of mass conservation does apply on the scale of the universe!
- 5) Immediately after the formation of the hydrogen atoms, they are transformed into hydrogen molecules by the formation of electron pairs. This results in the further expansion of the system of physical and chemical forces. See **Document F1d** www.uiterwijkwinkel.eu.
- 6) With the formation of hydrogen molucules and chemical bonds, heat is released (see point 4 orange area). The universe-spherical-shell becomes very hot and expands explosively on both sides for tens of km's.
- 7) At the end of the expansion of the universe sphere shell all molecules are transformed into single black hole atoms. Breaking up of all molecule bonds needs a lot of energy (see point 4 light purple area).
- 8) The spring tension within the spherical-layers of protons / electrons is converted into the expansion of the universe-spherical-shell itself.
- 9) Energy balance:

$$E_{\text{kinetic total radially}} = \frac{1}{2} \times \text{mass protons} \times (1/3 c)^2 + \frac{1}{2} \times \text{mass electrons} \times (1/3c)^2$$

$$E_{\text{kinetic total transversal}} = \frac{1}{2} \times \text{mass electrons} \times (2.2 \text{ Mm})^2$$
 - + Free added gravitational energy of the hydrogen molecules relative to the center C of the universe!
 - + Binding heat of the hydrogen molecules
 - Binding energy of the the hydrogen molecules

Figuur 79 : IV) The period of the cooling of the hydrogen gas to condensation point and the formation of giant hydrogen spheres.



IV) The period of the cooling of the hydrogen gas to condensation point and the formation of giant hydrogen spheres.

1) From the formation of the hydrogen (gas), the further expansion of the universe-spherical-shell with respect to C continues, but at the expense of the expansion velocity. From this time onwards, part of this expansion energy is converted into gravitational energy relative to center C!

In the following period of 10 - 15 billion (10⁹) years, the total gravitational energy relative to C decreases during the further expansion of the universe-spherical-shell.

2) Gravitation slows down the expansion rate. The energy released cannot be converted into heat! The deceleration of the expansion is almost completely converted into rotational velocity / energy within the initial hot gas of the universe-spherical-shell.

3) During this period, the universe-spherical-shell gets divided into approx. 4 - 20 billion (10⁹) rotating areas of pure hydrogen gas around the first rotation points R1. All the rotational areas have an equal radius of 1 - 2 million light-years. The expansion velocity/gravitation relative to center C of the universe is transformed into rotational-velocity/gravitation relative to the billions of R1s and centers of the 4 - 20 billion current galaxies.

4) The expansion rate decreases asymptotically to zero due to the gravitation in point IX where the universe-spherical-shell reaches its maximum expansion. At point IX all the expansion energy relative to C is converted into rotational velocity / energy relative to the R1s. The expansion velocity / energy is fully converted into rotational velocity / energy and rotational gravitational energy.

5) The hot hydrogen gas, which is still expanding on both sides, now cools down to the condensation point of hydrogen gas. Within the rotating areas spheres, with liquid hydrogen, is created and they rotate around R1. Around the central sphere, 2 - 4 slightly smaller and cooler side spheres of pure hydrogen are formed. They are the Roemer's.

6) In time, in the rotation centers R1, 4 - 20 billion (10⁹) giant spheres of pure, liquid hydrogen are formed. Each R 1 forms the center of one galaxy which will be formed later. Each sphere R1 comprises an amount of hydrogen which is equivalent to approximately 100 to 200 billion stars.

7) In time, the pure hydrogen spheres get larger. With the release of transversal gravitational energy the hydrogen spheres also become hotter. All the hot, hydrogen spheres are totally equal and they always have the same pressure and temperature. They simultaneously reach a temperature of millions of kelvin and that is when spontaneous fusion occurs.

8) In all of the 4 - 20 billion hydrogen spheres R1, spontaneous fusion eventually occurs simultaneously. (In the stars, formed much later, radioactive material is present. Inside these stars, the fusion starts much earlier and at a much lower pressure and temperature than the pure hydrogen supernovas).

9) E total kinetic beginning of IV:

$$E \text{ kinetic total radially} = \frac{1}{2} \times \text{mass of hydrogen} \left(\frac{1}{3} c\right)^2 \text{ (= expansion velocity) +}$$

$$E \text{ kinetic total transversal} = \frac{1}{2} \times \text{mass electrons} (2.2 \text{ Mm})^2 \text{ in the 'shell' electrons of hydrogen +}$$

$$+ \text{Gravitational energy of hydrogen molecules relative to C}$$

$$+ \text{Binding energy of the hydrogen molecule + converted binding energy into heat}$$

E total kinetic end of IV:

$$E \text{ kinetic total radially} = \frac{1}{2} \times \text{mass (all hydrogen molecules)} \times \left(\frac{1}{10} c\right)^2 \text{ (= expansion velocity) +}$$

$$E \text{ kinetic total transversal: } + \frac{1}{2} \times \text{mass shell electrons of hydrogen} \times (2.2 \text{ Mm})^2$$

$$+ \frac{1}{2} \times \text{mass (all the hydrogen molecules)} \times (vr)^2 \text{ (=}$$

rotational speed)

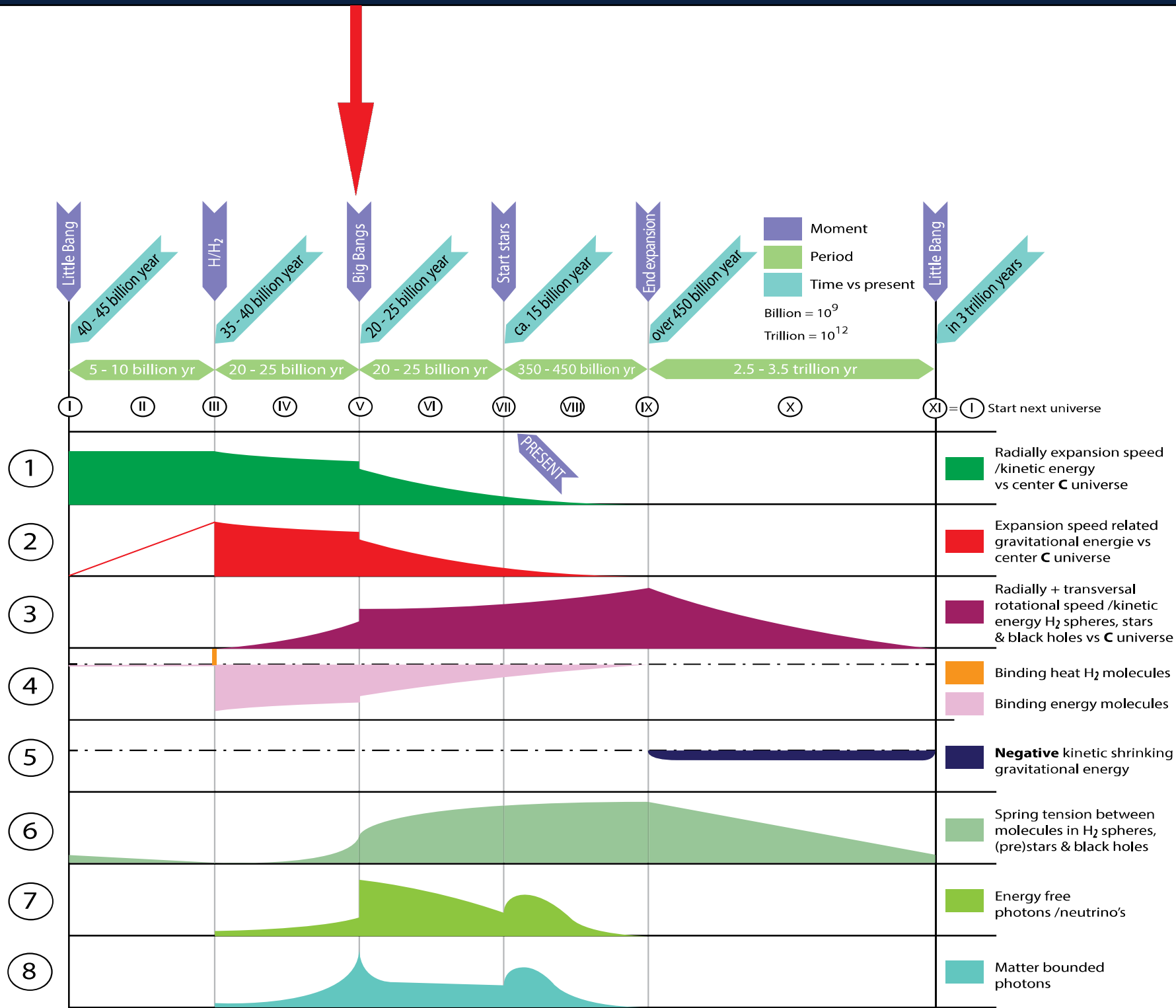
+ decrease gravitational energy of any hydrogen molecules relative to C

+ Transformation of expansion energy, relative to C, into rotational energy relative to the R1's

+ Electric spring tension inside the hydrogen spheres

- Binding energy hydrogen molecules

Figuur 79 : V) The moment of the 4-20 billion hydrogen supernovae.



V) The moment of the 4-20 billion hydrogen supernovas.

1) At this moment, the size and temperature of all pure and central hydrogen spheres increase and spontaneous nuclear fusion occurs at a temperature of several million degrees Kelvin. In the 2 – 4 cooler Roemers, rotating next to the central sphere, there is no nuclear fusion (See Figures 42-52 G8).

2) During these hydrogen supernovas in the central sphere, ± 15% of all the hydrogen present is converted into higher atoms. Of these newly formed higher atoms, approximately 13% of the atoms and especially ≥ Fe, is converted in the core of the supernova and directly transformed into the central black hole of the galaxy. A central black hole such as this, is created during all hydrogen supernovas. Such a central black hole has been observed at the center of all known galaxies.

3) The remaining higher atoms on the outside of the supernova, approximately 2%, with atoms mainly ≤ Fe and with a lot of radioactive material, is blown away together with the 85% of the non-merged hydrogen. This hydrogen is mainly found in the 2 - 4 separately formed secondary spheres of pure hydrogen or Roemer.

4) During these hydrogen supernovas in the central sphere, it is generally considered that during the fusion approximately 7% – 8 % of the existing 'shell' electrons bind with the atomic nuclei. These 'shell' electrons, which merged with the atom nuclei, lose their buoyancy, gravitation and gravitational energy. About 8% of the merged 'shell' electrons is converted into new and more comprehensive electron shells and maintain their gravitation and gravitational energy!

5) During these pure hydrogen supernovas approximately 7% of the gravity and the gravitational energy relative to C, disappear again. The moment of a hydrogen supernova can be seen by the sharp decrease in gravitational energy! Because the central gravitational sphere loses gravity, all Roemer's hurls away their R1's. With this, the Roemer's are stripped completely but without fusion and transformed into the spiral arms of the galaxy.

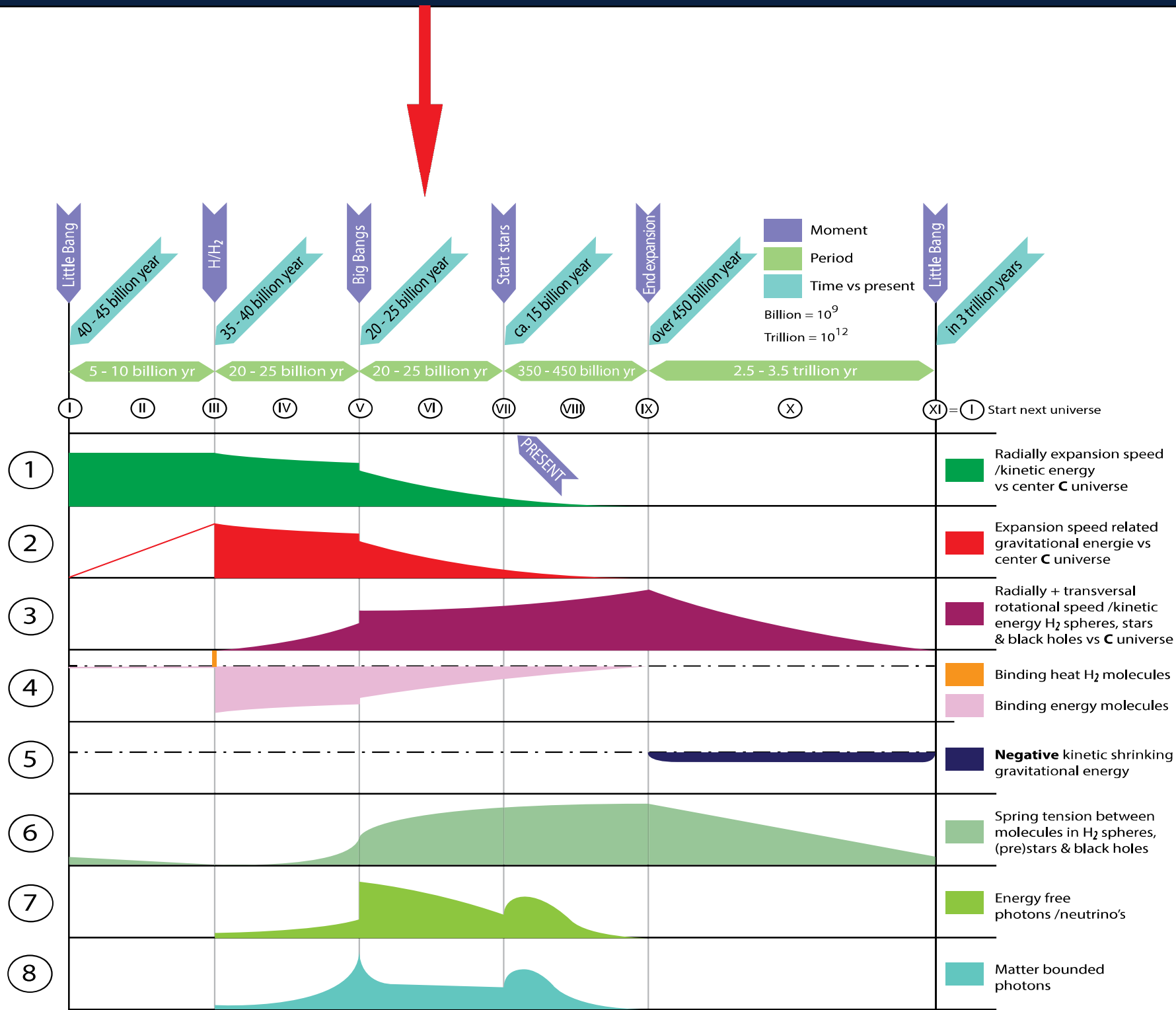
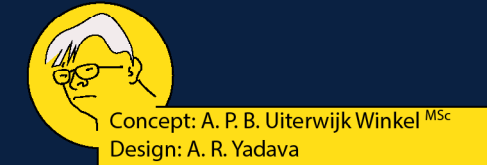
6) This newly formed higher atoms collapse, during the Little Bang, into black hole atoms and the central black hole of the future galaxy. As a result of the collapse of normal atoms into black hole atoms, the rotation speed of all the 'shell' electrons increases to the speed of light around their atomic nuclei. These 'shell' electrons also generate gravity. The amount of gravitation compared to the ratio of normal gravitational 'shell' electrons, is unknown. For the properties of black hole atoms see Document F1e.

7) The black hole atoms are crammed tightly together in the black hole. The electron shells of the black hole atoms repel each other. Thereby a tremendous electrical spring-tension spring / spring energy is created again; the light blue area. Gravitation keeps the black hole atoms trapped inside the black hole.

8) E kinetic total just before the 4 - 20 billion Big Bangs V:
 E kinetic total radian = ½ x mass (of all hydrogen molecules) x (1/10 c)² (= expansion velocity)
 E kinetic total transversal = ½ x mass shell electrons of hydrogen x (2.2 Mm)²
 + ½ x mass (all of the hydrogen molecules) x (vr)² (= rotational speed)
 + Existing gravitational energy of any hydrogen molecule relative to C and to the R1's
 + Electric spring tension inside the hydrogen spheres
 + binding energy hydrogen molecules
 E kinetic immediately after the Big Bangs V:

E kinetic total radian = ½ x mass (remaining 85% hydrogen molecules) x (1/10 c)²
 ½ mass (fused material; ≡ 2% hydrogen) x (1/10 c)²
 ½ mass (central black hole; ≡ 13% hydrogen molecules) x (1/10 c)²
 E kinetic total transversal = + ½ x mass 'shell' electrons x (2.2 Mm)²
 + ½ x mass (fused material ≡ 2% hydrogen) x (1 / 20c)² rate relative to the R1's
 + ½ mass (rotational central black hole ≡ 13% hydrogen molecules) x (vr)²
 - 7% – 8% Reduction in gravitational energy of all atoms relative to C and R1's with factor 0.93 at merger
 + Possible increase of gravitation by enormous rotational speed black hole
 + Electric spring tension between the black hole atoms inside the newly formed **central black holes**
 - Binding energy of all molecules

Figuur 79 : VI) The formation of the spiral arms of galaxies, proto stars and the solar system:



Period VI with the formation of the spiral arms of galaxies, proto stars and the solar system:

1) During the formation of the central black hole, the outer shell of the fusion area is blown away together with the 2 - 4 Roemer's, aided by the loss of gravitation. In the 2 - 4 Roemer's no fusion occurs. They still consist of pure hydrogen gas / plasma after the Big Bang.

2) Due to the loss of gravity in the R1s, the 2 - 4 Roemer's are hurled away from their R1s during the Big Bangs. The heat from the supernova explosion / Big Bang completely transforms the Roemer's and they are mixed with the supernova debris. This process results in a long trail of hydrogen / helium gas and lumps with higher radioactive elements. Each Roemer, mixed with supernova debris, becomes one spiral arm of the galaxy.

3) The merged atoms (approximately 2 %) form, under the influence of gravity, 100 - 200 billion planetary systems, each around one or two local large cores and 1 - 10 much smaller cores the size of a planet. This central cores and future stars contain approximately 90% - 98% of all matter in the solar system.

4) Gravity accumulates the major part (> 99%) of the hydrogen and helium gas present around the central heavy cores. In each galaxy, close to 100 - 200 billion planetary (solar) systems develop, each with an uneven distribution of gas clouds of hydrogen and helium.

5) In time, the radioactive supernova debris accumulates in this system of planets of which the largest will grow into single or double stars. The supernova grit accumulates more in the central sub-planets and planets. This process is still ongoing.

6) As time goes by, the hydrogen gas cools down to its condensation point again. This liquid hydrogen will mainly get deposited on the largest, highly radioactive spheres (> 99%) and become a star. A small fraction will deposit on the secondary spheres. These will become the gas planets.

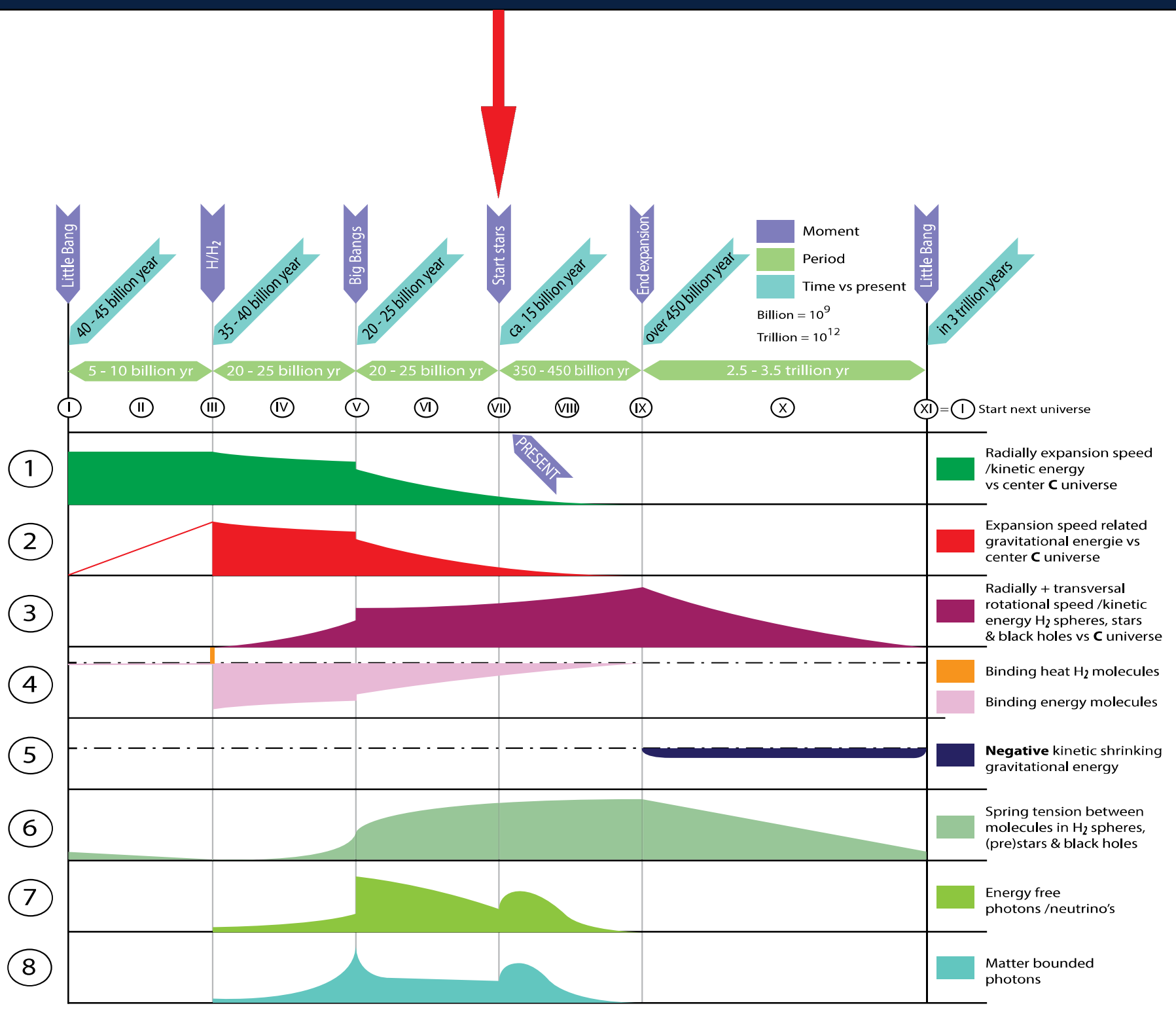
7) In time, the central sphere will absorb more liquid hydrogen and get bigger and more matter and gravity will continue to accumulate. During the growth of the proto-star more gravitational energy is released. This allows the central sphere and proto-star to become hotter until the temperature reaches several million kelvin. This results in a fusion in all proto stars.

8) E kinetic during the formation of proto-galaxies (even without fusion)
 $E_{kinetic\ total\ radially} = \frac{1}{2} \times mass\ (remaining\ 85\% \text{ of the hydrogen molecules}) \times (1/10\ c)^2$
 $+ \frac{1}{2} \times mass\ (fused\ material; \equiv 2\% \text{ of hydrogen}) \times (1/10\ c)^2$
 $+ \frac{1}{2} \times mass\ (central\ black\ hole; \equiv 13\% \text{ of the hydrogen molecules}) \times (1/10\ c)^2$
 $+ \text{transformation of gravitational energy relative to C to gravitational energy relative to the R1's.}$

$E_{kinetic\ total\ transversal} = + \frac{1}{2} \times mass\ of\ shell\ electrons \times (2.2\ Mm)^2$
 $+ \frac{1}{2} \times mass\ (fused\ material \equiv 2\% \text{ hydrogen}) \times (1/20c)^2$

compared to R1's
 $+ \frac{1}{2} \times mass\ (rotational\ central\ black\ hole \equiv 13\% \text{ of the hydrogen molecules}) \times (vr)^2$
 $+ \text{Increase of gravitation by the increasing rotational speed of the black holes R1.}$
 $+ \text{Electric spring tension between black hole atoms themselves.}$
 $+ \text{Electric spring tension between hydrogen in the, still to be formed, proto-stars.}$
 $- \text{Binding energy of all molecules}$

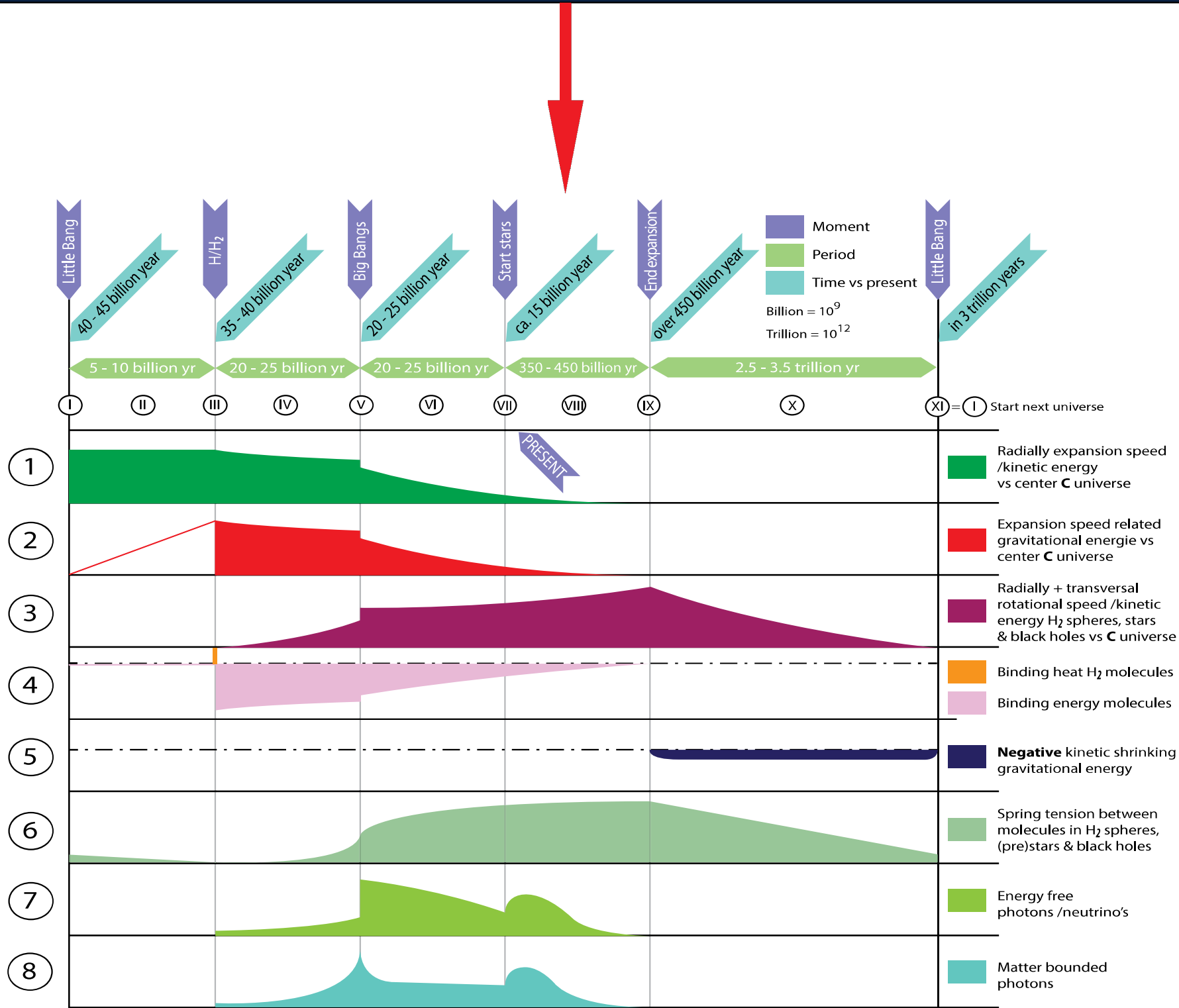
Figuur 79 : VII) The moment when nuclear fusion starts in stars:



VII The moment when nuclear fusion starts in stars:

- 1) With the growth of the proto-stars, the temperature rises to several million degrees Kelvin. At some point, these proto-stars start the fusion. Due to the presence of high radioactive elements, the fusion process in the proto-stars starts at a much lower temperature and pressure than was the case in the former Big Bangs.
- 2) Due to the radioactive elements, the nuclear fusion process happens quieter and more restrained than is the case with the ephemeral Big Bangs. In stars the entire settlement process of the nuclear fusion of hydrogen to helium can take billions of years.
- 3) Only atoms with two or more electron pairs in their electron shells can collapse from the inside to near the atomic nuclei. Then a common atom is transformed into a black hole atom that can be incorporated into a black hole.
- 4) The elements hydrogen, helium and lithium cannot be incorporated into the central black hole of the galaxy. This is because these lightest atoms possess no or only one pair of electrons and therefore cannot collapse and cannot form vanderwaals- / London-bonds inside the atom. The primary function of stars is to let all the hydrogen, helium and lithium transform, through nuclear fusion, into the element beryllium and higher, so that this matter can be incorporated into the central black hole.
- 5) In a nuclear fusion, the 'shell' electrons bonds with the nuclei to form 'nuclei' electrons. Through this fusion, the 'shell' electron loses its gravity and therefore also its contribution to the gravitational energy. As a result of the nuclear fusion in stars and the loss of gravity, it seems as if mass (m) is converted into energy, according to $E = mc^2$.
- 6) This is not the case! The mass of the higgs particles sec is indestructible. Through a nuclear fusion in stars only the amount of gravitation decreases and an amount of energy, resulting from the rotational speed (2.2 Mm/s) of the 'shell' electrons in photons, is released!
- 7) During the lifetime of stars, the generated gravitational energy decreases! This affects the orbits of the planets rotating the star. In time an increasingly wider orbit around the star, is described.

Figuur 79 : VIII) Period of burn-out of hydrogen to higher elements and the inclusion of the galaxy in its own central black hole.



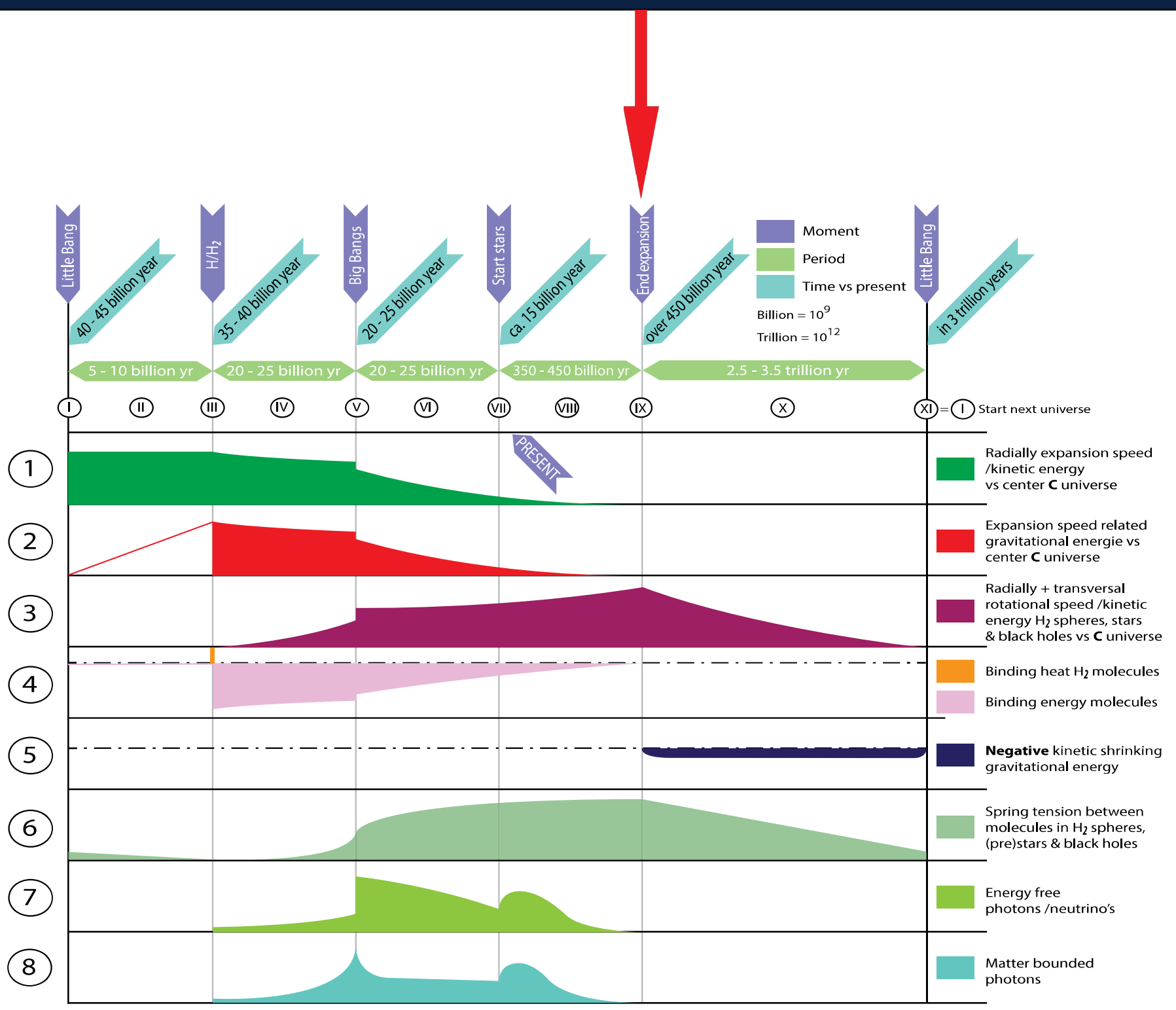
VIII The period of the burn-out of hydrogen to higher elements and the inclusion of the galaxy in its own central black hole.

- 1) From the hydrogen and higher elements (2%) emitted from the hydrogen supernovas, 4 - 20 billion galaxies are formed. Each galaxy contains 100-200 billion stars and associated planets. These stars and planets form around radioactive material that, in time, stabilize further.
- 2) During this period of 350-450 billion years, phase 23 of the cycle of the universe, the expansion of the universe is completely broken down and comes to a standstill. The maximum expansion will be approximately 3.0 ± 0.5 billion light-years relative to C. Then all expansion velocity / energy is converted into rotational velocity / energy of the galaxies and eventually into that of their *central black holes*.
- 3) At the end, all the stars, planets and all forms of radiation has to be absorbed by the central black hole. The universe-spherical-shell then consists of 4 - 20 billion fast, ($1/3 c - 1/2 c$) rotating *central black holes*. The universe / the universe-spherical-shell will then be completely dark.
- 4) The universe-spherical-shell between the galaxies is filled with extremely low concentrations of pure hydrogen. Within the galaxies there is also an extremely low concentration of helium present. The temperature is about 0 - 2.7 degrees kelvin. Such extremely low concentrations of hydrogen and helium result in an extremely small deflection of all forms of electromagnetic radiation and particle radiation.
- 5) Because of this slight deflection, all light and infra-red radiation within the universe-spherical-shell continues to move and cannot escape. The universe-spherical-shell is a closed system for all mass, matter and kinetic energy.
- 6) As a result of the spiral paths of light, the size of the universe is a factor of about 5 times smaller than what we think can be measured. Not 13.7 billion light-years, but a spherical shell with a radius of anywhere between 2.5 - 3.5 billion light-years.
- 7) During this period, all hydrogen is converted, through nuclear fusion, to elements \geq Be. Furthermore, all the 'shell' electrons, approximately 50%, bind to the atomic nuclei. This means that 50% of the gravity and of the gravitational energy, in effect, dissolves into nothing! The current, existing gravitational energy is in fact nothing less than the so-called 'dark' energy. All invisible expanding energy will be transferred into visible rotation energy!
- 8) All burned up stars, white dwarfs, red giants, neutron stars and local black holes are fully absorbed into the *central black holes* of the galaxies during this period of 350 - 450 billion years.
- 9) Furthermore, all cosmic particle radiation has to be transformed back into: a) protons / electrons, b) then to hydrogen atoms, c) via nuclear fusion in stars to elements \geq Be to d) finally, as black-hole atoms, to be incorporated into the central black hole again. This takes a lot of time.
- 10) At the end of this period all expansion velocity, energy, gravity and gravitational energy relative to C is converted into rotation velocity, energy, gravity and gravitational energy relative to the centers R1 of the galaxies.
- 11) At the end of period VIII, a huge electric tension spring has built up, which is held in check fully by the enormous gravitational rotation of the central black hole.
- 12) The three blocks shown on Figure 79 are in an energetic sense, quantitatively, approximately equal to each other!
- 13) E kinetic total end of VIII:

$$\text{Energy} = \frac{1}{2} \times \text{mass shell electrons} \times (c)^2 \quad (c = \text{speed shell electrons})$$

$$+ \frac{1}{2} \times \text{mass black hole atoms black holes} \times (1/3 c)^2 \quad (= \text{rotating black holes})$$
 - + Gravitational energy 4-20 billion *central black holes* relative to the R1's.
 - + Electric spring tension between black hole atoms in black holes themselves.
 - + The gravitational energy versus C as well the binding energy are decreased to zero

Figuur 79 : IX) The moment of maximum expansion of the universe.



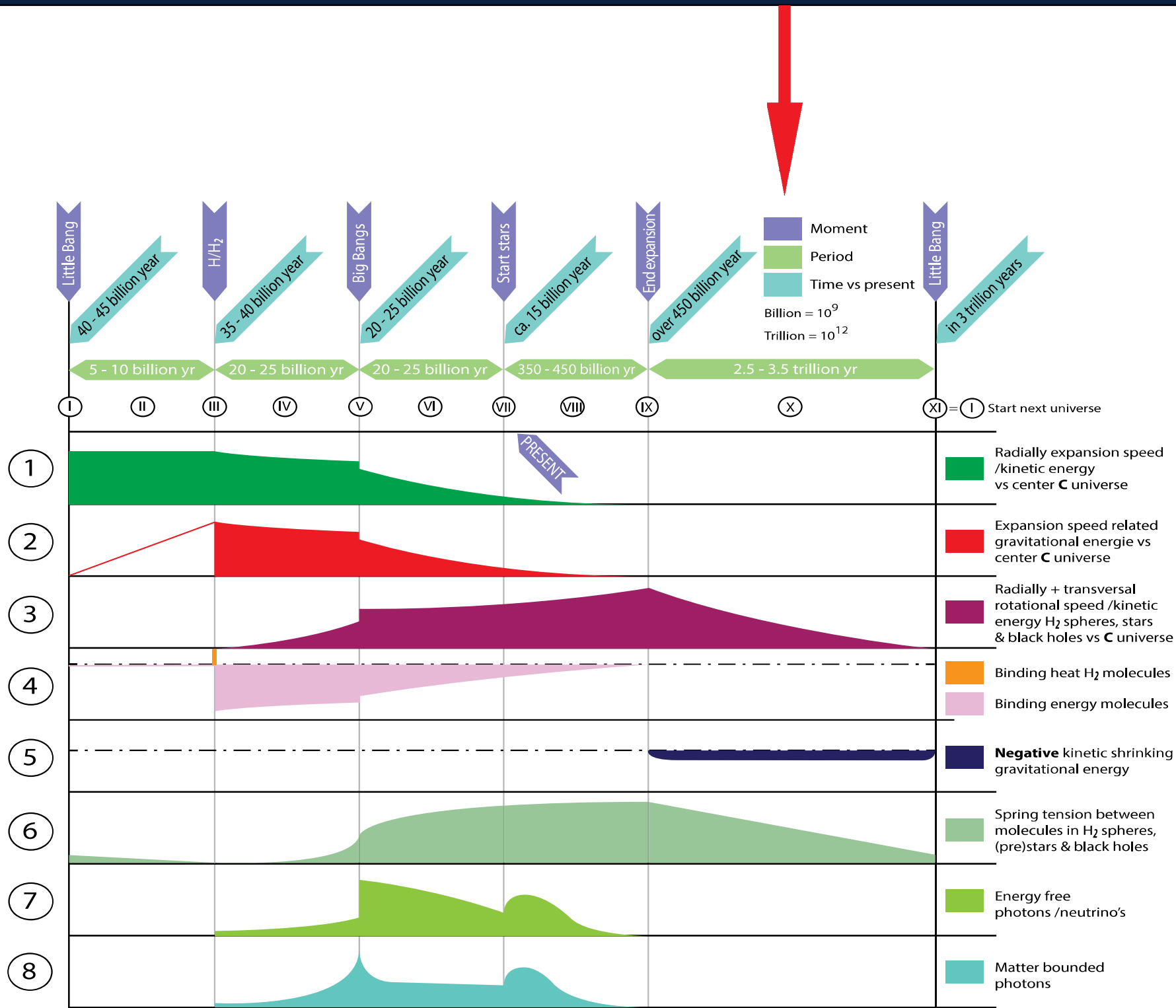
IX) The moment of maximum expansion of the universe.

- 1) The amount of gravitational energy in the universe is at its maximum and consists of three different blocks:
 A) rotational kinetic energy (and gravitation and gravitational energy) of the black holes R1 (dark pink),
 B) the gravitational energy of matter relative to C (light pink) is reduced to zero, and
 C) a huge spring tension inside the *central black holes*.
- 2) At this moment, the rotational energy (dark pink) of the black holes is at its maximum. This energy is equal to the original gravitational energy (light pink).
- 3) All kind or nowadays 5 – 9 speeds are now concentrated in the rotation speed of the *central black holes* arises towards 1/3 – 1/2 of the speed of light. All *central black holes* generate the same rotation gravity. The attract each other. All rotation axes of these *central black holes* are exactly pointed on the center C of the universe-spherical-shell!
- 4) The net accumulated total amount of spring tension energy is equal to that at the start of the Little Bang and step / phase I.
- 5) All *central black holes* consist of solid black-hole atoms. All previously emitted electromagnetic radiation and cosmic particle radiation are again trapped in orbits around black holes and transformed back into protons / electrons, hydrogen atoms / molecules through nuclear fusion to higher elements to finally be recognized as black hole elements in the central black hole.
- 6) The universe is a closed system regarding mass, matter and kinetic energy. Only gravitational radiation leaves the universe but it is the only form of radiation without mass, charge, magnetic spin and kinetic energy.
- 7) E kinetic currently IX = $\frac{1}{2} \times$ matter 'shell' electron hydrogen $\times (c)^2$ (c = speed electrons speed of light)
 $+ \frac{1}{2} \times$ matter black holes $\times (1/3 c)^2$ rotation black holes around their axes)
 $+ \text{Spring tension among black hole atoms themselves}$
 The gravitational energy versus C and binding energy are zero.

Figuur 79 : X) The period with the contraction of the universe and the formation of the Little Bang black hole



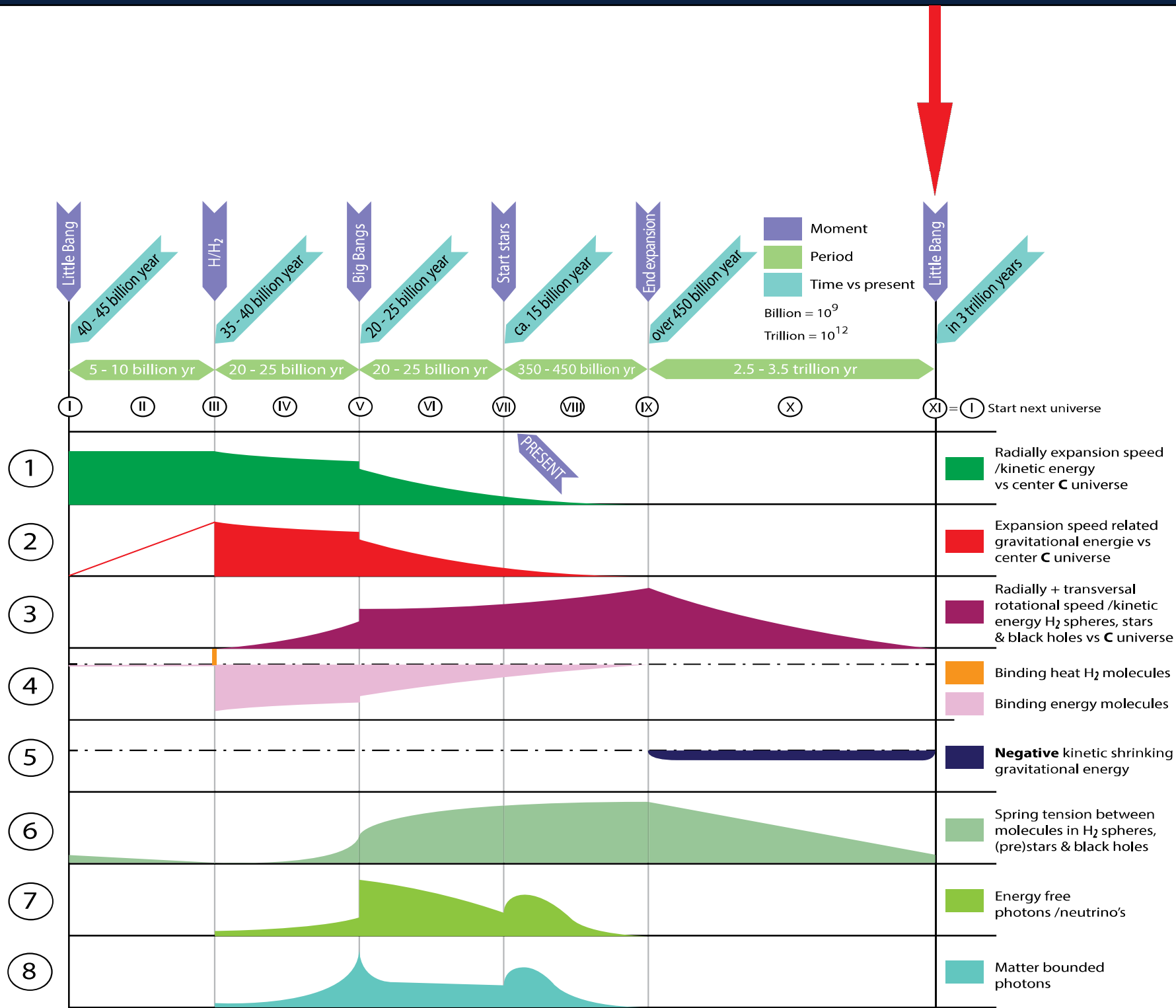
Concept: A. P. B. Uiterwijk Winkel MSc
Design: A. R. Yadava



X) The period with the contraction of the universe and the formation of the Little Bang black hole.

- 1) Gravity activates the universal and equal contraction of the universe.
- 2) The contraction generates its own shrinking gravitation. This contraction speed / gravitation and energy are completely opposite to their own rotational speed / gravitation and energy of the *central black holes* R1.
- 3) During the first contraction only acceleration occurs. With an increase of the contraction velocity the generated shrinking gravitation increases. However this shrinking speed / gravitation is directly opposite to the rotation speed /gravitation of the *central black holes* R1. This acceleration of the universe-spherical-shell is therefore continuously decelerated to a more or less constant speed at the expense of the speed of rotation of the billions of R1's.
- 4) In time, the *central black holes* rotate slower and generate less rotational gravity. The loss of speed and gravity causes them to become increasingly unstable. At the moment when all *central black holes* are back at the center C of the universe, they are all completely stripped of their rotational speed and associated gravity and gravitational energy. Then the final shrinking velocity provides just enough gravity to keep the repelling black hole atoms above the Critical black hole gravity (Cribhgra). In this way, they remain stable until the universe-spherical-shell has contracted fully.
- 5) The *central black holes* first coalesce into a universal-spherical-shell of black hole matter that continues to shrink. At the end of the contraction they merge together into one large, non-rotating perfectly round Little Bang black hole with the center C of the universe exactly in the center of this Little Bang black hole.
- 6) At the end of the contraction in the Little Bang black hole, the spring tension between the repelling black hole atoms remain. This is the same amount of spring tension, as at the beginning of the universe. This Little Bang black hole, which was formed, approaches its Cribhgra and the point of instability increases.
- 7) At the end of the contraction, all speed relative to C drops to zero. With this, the gravity of all the black hole atoms also drop to zero and the gravity of the Little Bang black hole drops back to zero too!
- 8) All other forms of energy has been lost or dissolved.
- 9) E kinetic at the end of X = $\frac{1}{2} \times$ matter 'shell' hydrogen x electron (c)² (c = velocity electron speed of light) + electrically spring tension between black hole atoms themselves.

Figuur 79 : XI / I) The moment of the next Little Cold Bang.



XI / I The Cold Little Bang.

- 1) Just before the Little Bang black hole is completed, the contraction speed and the connected gravity reaches the Critical black hole gravity (Cribhgra). All the added gravitational energy from the formation of hydrogen is then exhausted!
- 2) Then, the spring / spring tension of the black hole atoms mutually become greater than the gravitational force that has kept the Little Bang together until that moment. Then the giant Little Bang black hole disintegrates into loose, unstable black hole atoms which in turn further disintegrate into separate protons and electrons. They form mono-layers of protons and electrons.
- 3) The spring tension within these mono-layers protons / electrons ensures the re-expansion of the next universe.
- 4) The cycle of the universe begins all over again with the same number of protons / electrons and with the same amount of kinetic energy.