MECHANISM of FORMATION of UNIVERSE and GALAXIES

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Abstract

As the galaxies are formed and the Universe as a whole is reviewed in this article.

Explicitly we shall consider a qualitative picture of formation of a supernucleus, which one is the grandparent of the Universe and its main constituents - galaxies and their congestions. On the basis of this picture the capability of the mathematical description of each stage of process with this or that accuracy will appear. Apparently, what to describe formation of the Universe and galaxies only by gravitational interaction without engaging formation and decay of supernuclei it is impossible.

1. Electrically neutral matter is gradually agglomerated in a massive unified body. At reaching mass of a body comparable with mass of Jupiter or is little bit higher, inside a body the nuclear reactions start, there is a flash and formation of a new star. If it is not enough of matter in of ambient space for further intensive growth, the star passes in a rather stationary state and slowly evolves. Further we shall consider version of condensation of matter having nuclei of a mean part of the table of the Mendeleyev to not complicate a picture by nuclear reactions.

2. If mass of a body prolongs intensively to grow, at some critical mass there is a nonreversible collapse. If the body is gyrated, at a collapse two versions are possible: in the first version the rotation rate becomes such, that the body is torn under activity of centrifugal forces, forming a huge gas-dust cloud, in the second version comes into effect gravidynamic squeezing accelerating a collapse. This or that version is implemented depending on density and initial velocity of rotation of a body. If the body is not gyrated, the collapse is nonreversible at this stage. At final stage of a collapse of electronic shells for atoms fade, and superdense will be formed electronic - nuclear plasma.

3. Further neutronization of matter is happens. The electrons lose an angular momentum and will forms with protons neutrons. The nuclei of atoms gradually "are dissolves" until the homogeneous body from neutron gas will be formed. At gravitational compression and reaching of density, close to nuclear, the energy is exuded: $\frac{GM^2}{4R}$, which one is spent for "dissolution" of nuclei of atoms and formation of superdense neutron gas (to be crystallized this gas can not, since the formation of nuclei from one only of neutrons is impossible):

$$\frac{GM^2}{4R} = \frac{3}{2}kT\frac{M}{m_n} \qquad (1),$$

where k - Boltzmann constant, M/m_n - number of neutrons in neutron gas.
From (1):

$$T = 10,8 \cdot \sqrt[3]{M} \qquad (2),$$

if M to substitute in grammes. For the Sun in a considered condition $T=10^{12}$ degrees. Each neutron at such temperature has energy 130 MeV and it with a large reserve sufficient for full "dissolution" of nuclei, existing in a superdense body, and formation of homogeneous neutron gas. If to take into account magnetic interaction between neutrons more correct to speak about a neutron liquid.

In space are radiated an electronic neutrino. These processes are accompanied by heat absorption allocated at a collapse. The neutron body has ferromagnetic properties, in it the neutrons spontaneously are oriented in one direction, and there is a powerful magnetic field. If the body is gyrated, it the gravidynamic moment instigates and steadies orientation

of neutrons (pulsar). The neutron body in essence is unstable also duration of its existence is stipulated by time, for which one the energy of neutrons at the expense of losses will become less than 8 MeV. Apparently, that the neutrons can not "to be crystallized" with formation of a supernucleus consisting of one neutrons and remain in a body as superdense gas.

4. When the neutron body enough will cool down, the crystallization of a supernucleus starts. In a zone of crystallization half of neutrons are transformed into protons. The relativistic electrons and electronic antineutrino are simultaneously radiated. As the surface of a neutron body is chilled faster, the crystallization of a supernucleus on a surface happens practically permanently. Thus the relativistic electrons at the expense of a magnetic field are radiated as two opposite of directional jets. Inside a neutron body the supernucleus of much greater mass is gradually shaped, than supernucleus shell on a surface because of gravitational deduction of a shell.

If m - mass of a supernucleus shell, M - mass of a general superdense body with density close to nuclear density, and R - its radius. The number of protons in a shell is approximately equal $m/2m_p$, where m_p - mass of a proton, since in a supernucleus the number of protons is equal to number of neutrons (α-particles). From a requirement of a force equality operational on mass m at the expense of a coulomb repulsion and gravitational attraction in case of a crystallization from a surface, we shall discover: $\frac{m^2e^2}{16m_p^2R^2} = \frac{GMm}{R^2}$, whence we shall discover a stability criterion of a superdense body:

$$m \le \frac{16GMm_p^2}{e^2} \qquad (3).$$

If the left-hand part (3) will appear more right, there will be a drop of a supernucleus shell. By substituting in (29.7.3) numerical values of world constants, we shall discover:

$$m \le 1.30 \cdot 10^{-35} M \qquad (4).$$

From (4) it is visible, that the supernucleus in a superdense body makes a minor share of total mass. For example, for the Sun of mass $2 \cdot 10^{33}$ g mass of a supernucleus is sufficient only 26 mg, that it was dropped as a shell.

If the supernucleus will be formed in center of a superdense body, the potential energy wedge off of a supernucleus is peer or less to potential energy of a gravitational attraction of all mass: $\frac{m^2e^2}{16m_p^2r} \le \frac{GM^2}{4R}$, where r - radius of a supernucleus, whence, allowing, that density of a supernucleus and superdense body practically is identical:

$$\frac{R}{r} \ge \left(\frac{e^2}{4m_p^2G} \right)^{1/5} \qquad (5).$$

Substituting in (5) world constants, we shall discover:

$$R \ge 1.25 \cdot 10^7 r \qquad (6).$$

Instead of radiuses, we shall calculate in (6) masses:

$$m \le 5.10 \cdot 10^{-22} M \qquad (7).$$

Comparing (7) with mass of a supernucleus form on a surface, we see, that in case of a crystallization of a supernucleus inside a superdense body mass of a supernucleus can be on 13 orders more. In this case inside the Sun mass of a supernucleus 10^{12} g suffices to tear a body of the Sun from inside. Radius of such supernucleus makes 0.3 mms.

At formation of gravidynamic object (for example, pulsar) mass it can be small, but gravidynamic forces of compression are nuclear forces, therefore they are capable to contract a body up to nuclear density, at which will be formed one the supernucleus and rather long to retain it from a gap. At smaller rotation rate and rather small mass the gravidynamic attraction can appear poor for formation of a supernucleus, thus superdense will be formed gravidynamic object. The gravidynamic object can not exist a long time. Because of intensive power losses superdense the gravidynamic object will be destroyed under activity of centrifugal forces, and containing a supernucleus will blow up with huge energy liberation. The similar objects are rather possible in active cores of spiral galaxies.

5. The heat of entrails provides a large back pressure and also promotes an intensive convection. It hinders with formation of a supernucleus inside. The resistance to formation of a supernucleus is proportional to mass of a body and depends on growth rate of mass.

If mass of a body is not so great also velocity of its growth is inappreciable, outside neutral "shell" at some critical mass of a supernucleus any more can not counteract a coulomb repulsion of protons in a supernucleus and there is a flash of a Supernew star. The similar phenomenon should be watched and in cores spherical and elliptic galaxies. The process is very similar to explosion of the boiler with a superheated steam, when its walls are not capable to constrain rising pressure inside.

If mass of a body is significant, that is possible at its intensive growth, since the compression of a body is rather long-term on time, the neutral matter in "shell" is accumulated much faster, than grows the supernucleus and capable to retain a body from a gap at any mass of a body.

If the receipt of new matter ceases, the gradual compression of a body results in growth of a supernucleus, the critical state is reached and happens grandiose explosion. This case can be related both to explosion of the whole galaxy, and to Big Bang of all Universe as a whole. In the latter case inside a supernucleus reaching nucleon density of matter is possible. Thus a neutrino become "free" under the script of a large collapse and are volatilized from a body of the Universe until will take out such energy, that the condition of nucleon density of matter will vanish. This process should be accompanied by radiation a neutrino in the ratio: on 2 muonic antineutrino 2 electronic neutrinos and 1 electronic antineutrino or (at decay a muonic antineutrino) on 5 electronic antineutrino 4 electronic neutrinos. At nuclear density the Universe will collect in a ball of radius 4.5 a.u. This distance almost corresponds to radius of orbit of Jupiter (5.2 a.u.).

6. It is necessary to consider the mechanism of explosion of a supernucleus to close a cycle of evolution of the Universe and its constituents. Apparently, that the explosion of a supernucleus will happen then, when the coulomb repulsion of its parts will exceed squeezing from neutral "shell". If the body is fast gyrated, to squeezing "shell" is added gravidynamic squeezing.

Comments of the author: 1. Whether the sober glance on evolution of the Universe is possible?

Now it is possible to state only negative answer on raised the question. As is known, the alcohol hazes brains and disentangles tongues. The quoters of official science are not capable soberly to think, as are compelled to use a cocktail from official views to not become the outcasts in own environment and to not be deprived benefits. Here amateur performances are unallowed. The independent researchers now revels in a freedom of speech, which one is granted by the Internet and use in general wild mixture from fragments somewhere of heard official notions dilute by hootch of own cooking, therefore blabs whatever not listening each other. The time is necessary, that all have realized, that drive to bay ourself in a labyrinth and needs all to be started at first. Cool ardent heads the facts can only.

Here I shall try out very shortly (omitting details) to set up evolution of the Universe, being based on the fixed facts and not using any fabrications. It is necessary to begin from a history of the Universe up to «of Big Bang». A law of universal gravitation nobody canceled and pursuant to this law all matter of the Universe early or late will collect in one place. The encumbrances to a law of universal gravitation do not exist, except for of leisured fictions. Under operating of a gravitation protouniverse will be thickens, but the density of matter are higher nuclear does not exist (if again to discard cloud-castles). At nearing to nuclear density the law of balance of neutrons and positive protons in a nucleus enters into force, therefore in metastable «neutron» protouniverse step-by-step part of neutrons is transformed into positive protons. Protouniverse thus (on my calculations) has radius to approximately equal orbit of Mars. Inside protouniverse the supernucleus will be formed, but it can not to achieve the large sizes, since the coulomb repulsion on 36 orders is stronger than a gravitational attraction. Therefore in the nature of things there is «Big Bang» (but not silly «singularity» with infinite density). «Big Bang» to call by Large Fireworks more correct. The scattering flinders of the Universe on a path again are disintegrated, the outside debris receive a padding jet impulse, and internal are effectively slowed down. «The extension of space» is a delirium here again at all at what. It is clear, that the flinders of the Universe as a whole scatter in a slowed-up way. «The red

displacement» of spectral lines to proportional spacing interval up to distant galaxies is easily explained by propagation of photons from area of large gravity potential and also can be explained by actual increase of speed scatter of galaxies, but not at the expense «extension of space», and at the expense of padding jet impulses at decay of peripheral parts of the Universe, though it is process is limited in time. At the end matter of the Universe stops and under operating of a gravitation again returns in a condition of the protouniverse.

Kinetics of decay of supernuclei

All below-mentioned formulas can be updated, but thus incremental them crockhood does not give of new comprehension of processes, and the refinements are not strongly reflected in end results.

Charge of a supernucleus:

$$Z_0 = \frac{m_0}{2m_n} \cdot e \qquad (8),$$

where m_0 - nonrelativistic nuclear mass, m_n - nonrelativistic mass of a nucleon or neutron, e - elementary charge.

Potential energy of a coulomb repulsion of protons in a supernucleus:

$$E = \frac{Z^2}{4R} \qquad (9),$$

where R - radius of a supernucleus. Let's suspect, that each supernucleus is disintegrated on two parts, then: $\frac{m_0}{m_1} = 2 = \left(\frac{R_0}{R_1}\right)^3$, whence: $R_1 = \frac{R_0}{\sqrt[3]{2}}$, where m_1 - nonrelativistic mass of one debris after the first decay, R_0 - radius of an initial supernucleus, R_1 - radius of a debris after the first decay. Apparently, as $R_2 = \frac{R_1}{\sqrt[3]{2}}$ etc. For debris after n-decay:

$$R_n = \frac{R_0}{\sqrt[3]{2^n}} \qquad (10).$$

Apparently, that the number of debris the after n of decays will be $2n$, and charge each of debris:

$$Z = \frac{Z_0}{2^n} \qquad (11),$$

where Z_0 - charge of an initial supernucleus. By substituting (11) and (10) in (9), we shall discover potential electrostatic energy n-th of debris:

$$E_n = E_0 \cdot 2^{-\frac{5n}{3}} = E_0 e^{-1.555n} \qquad (12).$$

The general potential electrostatic energy of all debris will be:

$$E_{n\,gen} = E_0 \cdot 2^{-\frac{2n}{3}} = E_0 e^{-0.462n} \qquad (13).$$

From (12) and (13) it is visible, that both general energy, and energy of each debris decrease with increase n in a geometrical progression.

From the formula (10) it is easy to find number n of sequential decays of a supernucleus (for example, for a supernucleus with mass of the Sun R_0=1.67·10^6 cm) before obtaining a certain nucleus (for example, uranium R~7·10^{-13} cm). For this example n=183.

From (13) after the first decay of an initial supernucleus the energy will be released:

$$E_{el} = E_0 \left(1 - e^{-0.462}\right) = 0.370 E_0 \qquad (14).$$

This energy will be expended for increase of relativistic mass of two debris (velocity them practically is peer to speed of light):

$$E_{el} = 2m_{1p}C^2 \qquad (15),$$

where m_{1p} - relativistic mass of one debris. Equating (14) and (15), we shall discover:

$$m_{1p} = 0.185\frac{E_0}{C^2} \quad (16).$$

From (12) electrostatic energy of the first debris:

$$E_1 = E_0 e^{-1.555} = 0.211E_0 \quad (17),$$

And gravitational energy it with the registration (10) and (16):

$$E_g = 1.07\cdot 10^{-2}\frac{GE_0^2}{R_0C^4} \quad (18),$$

where G - gravitational constant. Here it is necessary to mark, that at decay of a supernucleus together with debris the part of a neutron liquid of a parent neutron body is captured, as mass of debris will increase on many orders, and the part of this liquid as jets is sprayed in ambient space. Besides the energy is spent for heating of a neutron body and miscellaneous kind of radiations accompanying decay and outbreak of debris. Therefore in further there is a sense to consider behavior of "bare" debris of a supernucleus to not make the arbitrary guesses, which one always disputable. Thus we shall show, that the parameters of behavior of "bare" debris are received so overstated, that allow in further with a large reserve to utilize practically any allowances.

Let's discover critical nonrelativistic mass of an initial supernucleus at the first decay which one the metastable debris will be formed. For these debris the gravitational energy should exceed electrostatic, i.e. $E_g \geq E_1$:

$$\frac{GE_0}{R_0C^4} \geq 19.7 \quad (19).$$

Substituting in (19) expressions (8) and (9), connection between mass and radius and receiving nuclear density equal 10^{14} g/cm^3, we shall receive rather unwieldy expression containing only world constants. Substituting values of these constants, finally we shall discover:

$$m_{0cr} \geq 4.61\cdot 10^9 \text{ g} \quad (20).$$

The supernucleus with mass is less, than on expression (20) all will blow up at once bodily. If mass of a supernucleus is significant more, than is determined by expression (20), the debris of the first order will metastable and be capable to scatter on large distance before there will be a repeated decay. Apparently, that than more than mass of an initial supernucleus, especially of high order the debris will be metastable. The picture of decay of a supernucleus is complicated by that the debris already of second order appears in disparate conditions. One of them can practically "to be stopped" and its relativistic additive of mass will vanish. In this case there will be a gap of this debris irrespective of its mass. The second debris in this case to the present relativistic additive of mass gains the additional additive and will be metastable at as much as small mass, since is look-alike to a rocket on a jet thrust.

At decay of a supernucleus its potential energy is transformed into a kinetic energy of debris, and as they move practically with speed of light, the energy is transformed into relativistic increase of mass of debris. In this case gravitational energy of attraction exceeds electrostatic energy of repulsion for each debris. In spite of the fact that the kind of the formulas is identical to a gravitational attraction and coulomb repulsion, but in result of rather sharp decreasing of relativistic mass, the curve of a gravitational attraction wanes more abrupt and intercrosses a curve of a coulomb repulsion in a critical point, when there is a possible repeated decay of debris. In connection with enunciated we can record:

$$\Delta E_g = \frac{(\Delta m)^2 G}{4\Delta r} = -\Delta mC^2 \quad (21),$$

whence:

$$\frac{dm}{dr} = -\frac{4C^2}{G} \quad (22).$$

The solution of an equation (22) provided that at $m=m_{1p}$, $r=2R_1$, where m - relativistic mass of debris of the first order, m_{1p} - initial relativistic mass of debris of the first order, r - distance between two scattering debris of the first order, R_1 - radius of debris of the first order:

$$m = m_{1p} - \frac{4C^2}{G}(r - 2R_1) \qquad (23).$$

Allowing a mesh size of supernuclei in matching with distance between them in (23) value $2R_1$ it is possible to neglect.

Equilibrium condition of debris of the first order:

$$\frac{m^2 G}{4R_1} = \frac{Z_1^2}{R_1} \qquad (24).$$

Substituting in (24) expressions (23), (8), (9), (11) and (16), we shall discover critical distance between debris of the first order, they are farther which one are capable to repeated decay:

$$r = 1439 \cdot m_0^{5/3} \quad \text{cm} \qquad (25).$$

Now all above mentioned we can illustrate by calculations for the Sun, for galaxies - pigmy, for our Galaxy and galaxy Andromeda and for the Universe as a whole. The results are shown in the table.

Title	Mass, g	Mass of supernucleus, g	Energy of the first decay, erg	General energy of full decay, erg
Sun	$2 \cdot 10^{33}$	$1.02 \cdot 10^{12}$	$4.3 \cdot 10^{52}$	$1.2 \cdot 10^{53}$
Galaxy - pigmy	$2 \cdot 10^{39}$	$1.02 \cdot 10^{18}$	$4.3 \cdot 10^{62}$	$1.2 \cdot 10^{63}$
Milky Way	$2 \cdot 10^{44}$	$1.02 \cdot 10^{23}$	$9.2 \cdot 10^{70}$	$2.5 \cdot 10^{71}$
Universe	$1.3 \cdot 10^{56}$	$6.63 \cdot 10^{34}$	$4.6 \cdot 10^{90}$	$1.2 \cdot 10^{91}$

The simplest case corresponds to explosion of a not rotated or feebly rotated body, to which one it is possible to relate form after explosion spherical and elliptic galaxies, spherical congestions of stars and Universe as a whole. Apparently, that the debris of a body in the beginning will be moves practically with speed of light since all accumulated potential energy passes in a kinetic energy of debris. In short period of acceleration the debris gain a relativistic velocity, therefore, mass will increase them on many orders. Thus the gravidynamic field at the expense of huge mass and huge motion speed becomes so powerful, that steady against decay it appear not only nuclei of far transuranium elements, but also supernuclei of the macroscopic sizes. For example, in case of Big Bang these supernuclei have mass on many orders superior mass of a galaxy. In case of explosion spherical or elliptic galaxies the debris on mass exceeds spherical congestions of stars. Sharply increased total mass effectively brakes debris, reducing their kinetic energy and mass. At last, on some distance from of centre explosion there comes a critical moment, when the motion speed of debris becomes noticeably less speed of light, thus total mass sharply decreases and becomes to possible decay of more small-sized supernuclei in debris. At full decay of all supernuclei debris moves already on inertia thus the matter of "shell" as unobservable bodies' places on a periphery of a galaxy behind its visible sizes. All components both Universe as a whole, and spherical and elliptic galaxies at the end moves on elliptical orbits with an eccentricity close to 1. The initial supernucleus can not blow up all at once, since the electrostatic intensity is maximum on its surface, therefore process of decay is represented as a series of explosions. The outside shell dumped, thus the central part is some time in a metastable state at the expense of pressure of the first explosion, then the second shell with smaller energy is dumped etc. A central core of a galaxy, zone of ultrarelativistic velocities, zone of decay of secondary supernuclei, zone of inertial motion and zone of oddments of "shell" thus is shaped. Therefore for some spherical and elliptic galaxies the astronomers watch aliasing of brightness in a direction to center of galaxies. This aliasing grows out not only repeated explosions of a central supernucleus, but also periodic explosions of a galaxy at the expense of drop of matter to center and formation of

a new supernucleus. As at Big Fireworks (decay of supernuclei) the spray of debris in the miscellaneous sides is equality probability, the Universe as a whole should have an internal part from a stationary value of mean density and outside, where mean density of matter is inversely proportional to a square of distance from center and where the scattering matter does not contain any more supernuclei. That and to galaxies of any type concerns.

The analysis of explosion of a fast rotated body is more interesting to that the described mechanism of explosion of a supernucleus is spread in an equatorial plane of rotation and is seen directly. Thus the spiral galaxies will be formed. The operation of law of preservation of a impulse determines the symmetrical form of any galaxy. For a rotated body under the same law the decay of a supernucleus should look as two identical flows of matter, directional in the counter sides. As relativistic mass of these flows is huge, they practically are rectilinear for preservation of the law of an angular momentum ($S=mVr$, at $m\to\infty$, $V\to0$). When the velocity of flows will appear below than speed of light, the decay of more small-sized supernuclei will begin. Thus, at single-pass explosion of a rotated supernucleus the intercrossed galaxy will be formed, the end of bar to which corresponds one a start of a zone of decay of secondary supernuclei. As a result of sharp decreasing of mass on the end of bar, the development of a principle of conservation of moment of momentum urges matter to be bent as a spiral branch. Thus, the single-pass explosion of a supernucleus results in formation of two spiral branches of a galaxy. As a result of the subsequent explosions will be again formed bars and pair spiral branches. Therefore for spiral galaxies the even number of spiral branches should be watched. Here it is necessary to mark, that because of miscellaneous velocities of orbital motion of a material depending on radius and bars and the spiral sleeves are gradually spread. This is promoted also by multiple repeated explosions and not so high speed of rotation of a parent supernucleus. For a not so fast rotated parent supernucleus the galaxies SO (lenticular) being a transition type between elliptical and spiral will be formed for which one alongside with an elliptical part it is possible to distinguish on a periphery oddments of spiral sleeves. For our spiral Galaxy and the nebulas Andromeda are legibly traced M-figurative curves of rotation, which one can be interpreted as initial explosion of a parent supernucleus and repeated explosion. At each explosion in a zone of ultrarelativistic velocities and in a zone of decay of secondary supernuclei mean density of matter practically is constant, therefore this part of a galaxy is gyrated as a solid body - orbital velocity almost linearly is incremented with radius. In a zone of inertial motion mean density of matter is inversely proportional to a square of radius; therefore rotation rate practically is constant. M-figurative curve of rotation is received by addition of curves of two consecutive explosions. In this connection for such galaxies should be watched till four spiral sleeves.

Evolution of sprays of a neutron liquid.

The epoch of supernuclei near to center of Big Bang of the Universe was finished rather fast, approximately 5-6 billions of years back. In result the galaxies of that or diverse type were formed, and they transfer to a rather stationary state, which one is upset only by repeated formation of supernuclei at the expense of a collapse. However spraying of a neutron liquid gives to its "drops" of relativistic velocities of motion. Therefore repeated formation of supernuclei in drops results in the much greater share of mass of a supernucleus in matching with mass of a drop (I shall remind [1], that for a drop with small absolute speed of motion mass of a supernucleus before a gap makes $5.1\cdot10^{-22}$ total masses). At repeated explosions of supernuclei the circumferential drops receive so large summary relativistic mass, that the supernucleus in them becomes metastable and takes all volume of a drop. At general deceleration of expansion of the Universe at the expense of gravitation the circumferential drops become unstable; there is a gap of a supernucleus and formation of galaxies. The described picture explains the law of Habble and existence of quasars. Simultaneously it confirms that the process of expansion of the Universe now was strongly slowed or practically was finished about 5 billions of years back. Otherwise we would not watch quasars, which one mean boundary of the Universe. Thus, the decay of supernuclei in the Universe as a whole has zone structure: on a periphery we the intensive process of formation of galaxies apparent, which one in our area of space for a long time was finished (quasars), we are closer to center apparent of a Safert's galaxy, radio galaxies and *N*-galaxies for which one the decay of a supernucleus is close to completion and near to

center - "quiet" galaxies. After the first explosion of a supernucleus inside a neutron body a supernucleus again will be formed, as the debris can not take out in space all neutrons liquid, there is a repeated explosion etc. Outwardly it is exhibited in an alternation of brilliance of objects. The period of activity depends on mass of a body, rotation rate, temperature, displacement of a supernucleus concerning center of a body, simultaneous formation of several supernuclei etc. In an ideal case the period of activity corresponds to operation of the good timer. Any neutron body radiates in space a continuous stream of electrons, protons and antineutrino because of instability of a neutron. At reaching mass of a neutron body comparable with mass of planets, it is already unfit to form a supernucleus in center, therefore instead of a single supernucleus the nuclei of customary elements crystallize. Here it is possible to agree with official notions, that at the expense of fast and sluggish capture of neutrons in these conditions the formation of nuclei down to uranium is possible. Apparently, that the formation of transuranium and super heavy, already died out in our area space, of isotopes is possible only at decay of supernuclei. Thus, in the Universe formation of the steadiest nuclei iron and nickel happens both "from above" - at decay of supernuclei and "from below" - at synthesis of nuclei in a neutron liquid. At formation of customary atoms radius of a neutron drop is incremented approximately in 30000 times. If total mass is rather great, the body receives the equilibrium spherical form, and if is small, as a result of asymmetrical thermal losses the space body will have the improper form, as we see it for asteroids. If mass of a neutron drop is insufficient for formation of customary nuclei, such drop will forms a cloud of hydrogen as a result of decay of neutrons. Thus, behind visible boundaries of the Universe or galaxies there should be invisible cold bodies planetary and planetoidal of the sizes.

The enunciated physical model is rather clear both is consistent and will allow constructing an adequate mathematical model of formation of galaxies. Some integrals of equations do not express through elementary functions, therefore here can help or reasonable allowances, not leaving for a framework physical model, or computer simulation.

The developed concepts of formation of the Universe and galaxies completely contradict a theory of relativity. For example, very sharp growth of mass at formation of bar of intercrossed galaxies and its so sharp decreasing at motion of matter in the counter sides with velocity of almost equal speed of light indicates that the gravitational field is spread with velocity considerably superior speed of light.

In conclusion of this section of the book the author wants to state following. The agents of official science in fundamental partitions of physics bound with a microcosm up to the last capability will resist to ideas of new physics. This is promoted by following circumstance. The microcosm cannot be watched directly, a broad field for scientific gamble therefore is unclosed, official physics has succeeded in which one. Worked a vast arsenal of artful methods for elimination "of difficulties of the theory", therefore of physicists while feel is comfortable. It's quite another matter the astronomers and cosmologists. Error notions at a level of atom, atomic nuclei both elementary particles and theory of relativity in two faces - SRT and GRT have put a modern cosmology in a completely desperate position. Any attempts to understand evolution suffices large mass result in a unequivocal and sad perspective - "to black holes". Though in space it is impossible to put experiments, but results of catchy experiments put by the Nature is possible to see directly by own eyes. As a result of a field for scientific gamble minimum is becomes. Therefore author hopes, what exactly the cosmologists and the astronomers first favorably will perceive ideas of new physics and will take them on arming.

Proton transmutation of nuclei.

In chapter 6.1. [1] was shown, that the electron-binding energy with a proton in neutrons of atom nuclei is about identical to any nuclei and makes 0.76476 MeV. It corresponds to temperature of 6 billions degrees. Apparently, that at such temperature the neutrons in nuclei of atoms will lose stability and will be disintegrated under the scheme: $n \to P^+ + e^- + \tilde{\nu}_e$. In outcome any nucleus is transformed into proton formation, which one any more can not be retained by nuclear forces and under operating of electrostatic repulsive forces of positive protons from each other they scatter in the miscellaneous sides with huge speeds. At braking electrons and protons in ambient matter, temperature it is increased even more and the process develops explosion-visual, if the ambient matter has

sufficient density. Outwardly this phenomenon looks, as the efflux from cores of galaxies of clouds of Hydrogenium and electromagnetic radiation in a broad band of waves-length. As the phenomena accompanying proton transmutation of nuclei and decay of a supernucleus in many are similar, we shall consider differences in conditions of a development of these effects. Apparently, what for proton transmutation temperature $6 \cdot 10^9$ K is necessary only. Density of matter thus has not value. Nuclear density of matter is indispensable only for formation of a supernucleus, and its temperature has not value. If our scientists reach sometime temperature proton transmutation, will convert the Earth into a huge cloud of Hydrogenium. In real conditions of space the collapse of space bodies with simultaneous increase of temperature and density of matter is frequently watched. If the collapse takes place slowly and the surplus heat is enough fast removed, the formation of a neutron star is probably and at further increase of density - formation of a supernucleus. If heat loss at a collapse small, at large collapsing mass any conceivable temperatures are accessible and proton transmutation becomes inevitable long before formation of a neutron body and the more so achievements of nuclear density of matter. One more difference proton transmutation from decay of a supernucleus is encompass byed volume, that all possible elements and their isotopes including those short-lived isotopes and transuranium elements in the latter case will be formed, which one for a long time have vanished in an adjacent space. At proton transmutation of nuclei Hydrogenium will be formed only and the helium in a small amount is possible.

Possible mechanism of formation of a neutron star

The fact of capture by a nucleus of atom of the proximate orbital electron (e-capture) is known. Thus one of protons of a nucleus is transformed into a neutron. The e- capture is watched for nuclei with deviation of an optimal constitution of the nucleus in the side of excess of protons (see chapter 12.2 [1] and formula (12.1.13.) [1] chapter 12.1 [1]). It is clear, that by an electron capture in a usual terms it is impossible to transform all protons of a nucleus into neutrons. The optimal constitution of the nucleus is reached usually at single electron-capture.

To tear off all electrons from nuclei iron (more high-gravity nuclei us do not interest) temperature is necessary $71 \cdot 10^6$ K. At this temperature the matter represents plasma from naked nuclei and electrons in which one the thermonuclear reactions are possible. As a matter of fact it is a star. Indicated temperature is easily reached at a collapse of gas-dust clouds of mass approximately to equal 4 masses of the Sun. In described conditions the electrons, being interfere with by nuclei, transmit to them the moment of momentum $\hbar$ and remain only with an own moment of momentum $\hbar\alpha$, where α - fine structure constant. Such electron is look-alike to a superconducting electron (chapter 5.5.1 [1]) and will forming with a proton of a nucleus a neutron (chapter 9.6.1 [1]). Density γ of a star in which one takes place neutronization of nuclei depends on its radius and if it is peer to solar radius, $\gamma = 0.52$ g/cm^3. Apparently, that it is endothermic neutronization process since as a matter of fact, necessary to shatter step-by-step nuclei, substituting positive protons on neutrons. Neutrons is weakly interact with each other and will not formed crystalline structure what is the nucleus of atom. Therefore further collapse does not result in increase of temperature of a star while it will not become bodily neutron. The same reason causes very much low speed neutronization. As neutronization magnetic moments of neutrons are step-by-step arranges in one direction, there is a powerful magnetic field and the star as a whole starts fast to turn around, that the common torque of neutrons and star remained a constant.

If the presentational star at a collapse will reach density 10^{13} g/cm^3 that energy release in this process will make $7.345 \cdot 10^{53}$ ergs. Total of nucleones in a star $4.75 \cdot 10^{57}$. On each nucleone the energy is account $1.55 \cdot 10^{-4}$ ergs or 96.7 MeV. The obtained value demonstrates, that the evolved energy has enough not only for destruction of all nuclei, but also for compensation of heat losses at long-lived process of formation of a neutron star. What further destiny of a neutron star? Its temperature is close to temperature proton transmutation (chapter 29.7.3 [1]), and density is close to nuclear density and formation of a supernucleus. Therefore explosion of a neutron star from proton transmutation or the supernucleus practically are equiprobable. The rather long-lived existence «cold» of a neutron star is so interquartile so long as it not «will thaw» from radiation and decay of

neutrons. If will be received so, that the neutron star suddenly will get under gravitational radius and will become «a black hole», it will turn out insulated in relation to heat- and mass-transfer and in very short time will finish the existence on one of the scripts, described in chapter 29.2. Last version: temperature of a neutron star at cooling becomes less than $71 \cdot 10^6$ K and the reverse of formation of normal nuclei starts. At further cooling the neutron star can be burst mechanically under operating of centrifugal forces, since at a crystallization of normal matter the volume of a system is augmented approximately in 35000 times. Thus in space the neutron splashes and miscellaneous size debris of normal matter scatter. The large debris receive the equilibrium spherical form, more small-sized - out of shape, and from small-sized neutron splashes the clouds of Hydrogen will be formed and crystallize the asteroids pyriform of the shape because of irregular heat wastes.

References:

1 http://www.new-physics.narod.ru