PLANETARY SYSTEMS

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Abstract

The satellites of planets in the majority are grasped bodily and clear demonstrate the exited state caused by continuous growth at the expense of a space material.
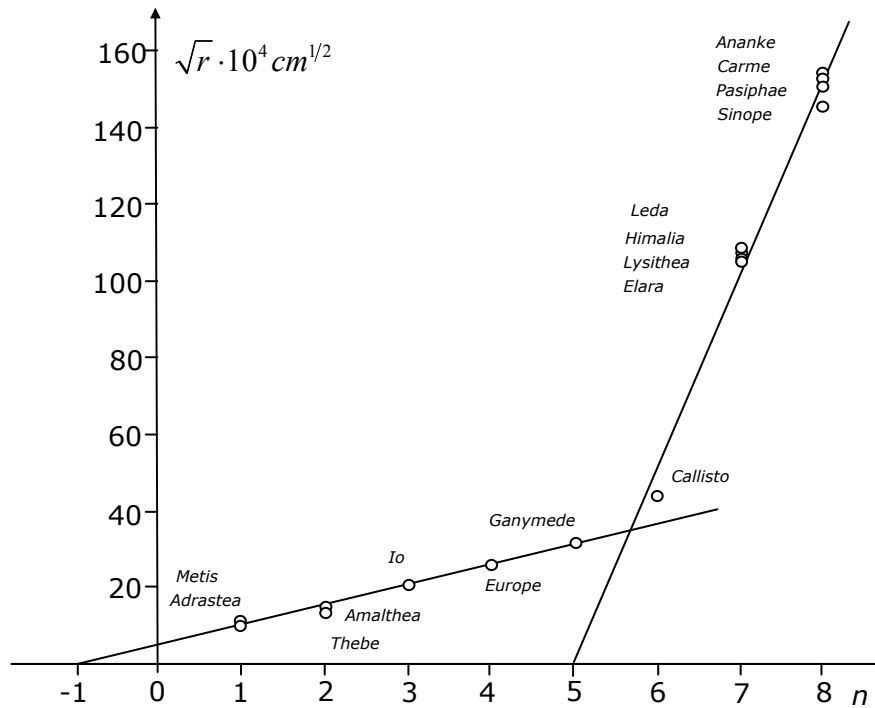
Fig. 1

On a figure 1 the relation $\sqrt{r}$ from integers for satellites of Jupiter is shown. For Jupiter a qualitative pictures same, as well as for all Solar Systems. The satellites of "earth" group (first seven) and "jupiter" of group are legibly parted. Jupiter is in stage of intensive growth of mass (and here - here will turn to a star, see about it is lower) about what it is possible to judge that as the satellites "earth" and "jupiter" of groups are till some pieces in one quantum condition. It is possible even to guess, that Jupiter has asteroid belt between satellites "earth" and "jupiter" of groups. Indirectly about arrangement of this asteroid belt between orbits Ganymede ("earth" group) and Callisto ("jupiter" group) is possible to judge saturation of a surface of these satellites by impact craters. "The surface Callisto is most saturated by craters, farthest from Jupiter from Galilean satellites, and to a lesser degree surface Ganymede. The fresh craters Callisto and Ganymede, except for large multiring formations, are similar to craters of other planetary bodies. The change type a constitution of craters from simple to composite happens at diameters less than 10-20 kms. On Europe the single craters are detected. On Io impact craters are not retrieved, apparently, that the surface of this satellite is continuously renovated by active modern volcanic activity". E.N. Sluta etc. "Comparative planetology", "Science", M., 1995, page 35-36.

"Earth" group of Jupiter: $r = r_0 \cdot n^2 = 0.273 \cdot 10^{10} \cdot n^2$ (cm),

$\alpha = \sqrt{r_0 G M_j} = 1.86 \cdot 10^{16}$ cm²/sec.

Satellite	Radius orb. 10^{10} cm	Calc. 10^{10} cm
Metis (2)	1.28	1.09
Adrastea (2)	1.29	
Amalthea (3)	1.81	2.46
Thebe (3)	2.22	
Io (4)	4.22	4.37
Europe (5)	6.71	6.82
Ganymede (6)	10.70	9.83

"Jupiter" group of Jupiter: $r=r_0 \cdot n^2 = 25 \cdot 10^{10} \cdot n^2$ (cm).
$\alpha = 17.8 \cdot 10^{16}$ cm^2/sec.

Satellite	Radius orb. 10^{10} cm	Calc. 10^{10} cm
Callisto (1)	18.83	25.0
Leda (2)	110.9	100.0
Himalia (2)	114.8	
Lysithea (2)	117.2	
Elara (2)	117.4	
Ananke (3)	212	225
Carme (3)	226	
Pasiphae (3)	235	
Sinope (3)	237	

If in a solar System as a whole there is a suspicion, that such planets as a Mercury (because of a large eccentricity), Venus (because of reverse rotation around of an axis "Radar observations allow to draw a conclusion, that Venus, as against other planets, is gyrated in the party opposite to a direction of its motion around of the Sun, with a period, close by 243 day", V.G. Demin "Destiny of a solar System", "Science", M., 1975, page 16.), Uranus (because of a large declination of rotation axis), Pluto (because of a large eccentricity and large slope angle of orbital plane to a plane of an ecliptic) are captured by a solar System bodily or in their greater part, the constitution of a satellite system of Jupiter (as well as satellite systems of other planets) firms in this suspicion. In process of removal of satellites from Jupiter and easing of a gravidynamic field, eccentricities and the slope angles of planes of orbits are incremented, a backward motion of outside satellites and presence of the majority of satellites in the same quantum conditions with conspicuity demonstrate, that the capture predominates above gradual growth of the terms of a solar System. "The feature, most mysterious and not explained by cosmogony, of satellites of Jupiter is connected to four external satellites motion around of Jupiter in a direction, opposite to a current of traffic of the majority of other satellites of planets". Ibidem, page 26. "A satellite irregular (inverse) - the satellite with prelates, is strong inclined (frequently inverse) orbit, which one indicates capture of these bodies. Orbits of satellites irregular are arranged in external areas of a gravitational field of planets. For Jupiter satellites irregular will forms two groups till four terms in everyone. The first or internal group is apart 160R (radiuses of Jupiter) and is characterized by an eccentricity $e\sim0.15$ and inclination of orbits $i\sim28^0$. The external group is apart 360R, $e\sim0.25$ and $i\sim150^0$. A satellite of Saturn Phoebe and satellite of Neptune Nereid also are satellites by irregular". E.N. Sluta etc. "Comparative planetology", "Science", M., 1995, page 65.

As well as it was necessary to expect, because of large removal from the Sun, in a satellite system of Jupiter we discover satellites "earth" and "jupiter" of group with low quantum numbers, since $n=1$. The satellite of 1 "earth" group can not exist as an integral space body because of strong tidal effect of Jupiter, therefore we apparent a ring of Jupiter. "The ring of Jove - is arranged in an equatorial plane apart 55 000 kms from visible boundary of clouds (about 3/4 radius of a planet). Width of a ring of 6 000 kms at thickness about 1 km. Is formed by particles with a low reflectance (less than 5 %) and sizes from several micrometers up to several meters". E.N. Sluta etc. "Comparative planetology", "Science", M., 1995, page 29.

On a figure 2 the relation $\sqrt{r}$ from integers for a satellite system of Saturn is shown.

"Earth" group of Saturn: $r = r_0 \cdot n^2 = 3.65 \cdot 10^8 \cdot n^2$ (cm),

$\alpha = \sqrt{r_0 G M_S} = 3.72 \cdot 10^{15}$ cm²/sec.

It is interesting to mark, that the quantum numbers of satellites have large values, apparently, because of a famous ring of Saturn implementing the lesser quantum numbers. "Rings of planets - set of separate small bodies or particles ambient planet - giant as broad (in orbital plane) and thin ring formations. It is supposed, that rings arranged usually in a limit of Rosh (closer a satellite fails from activity of tidal forces and the formation of a unified body is impossible - V.K.), represent a material of the not formed satellites.
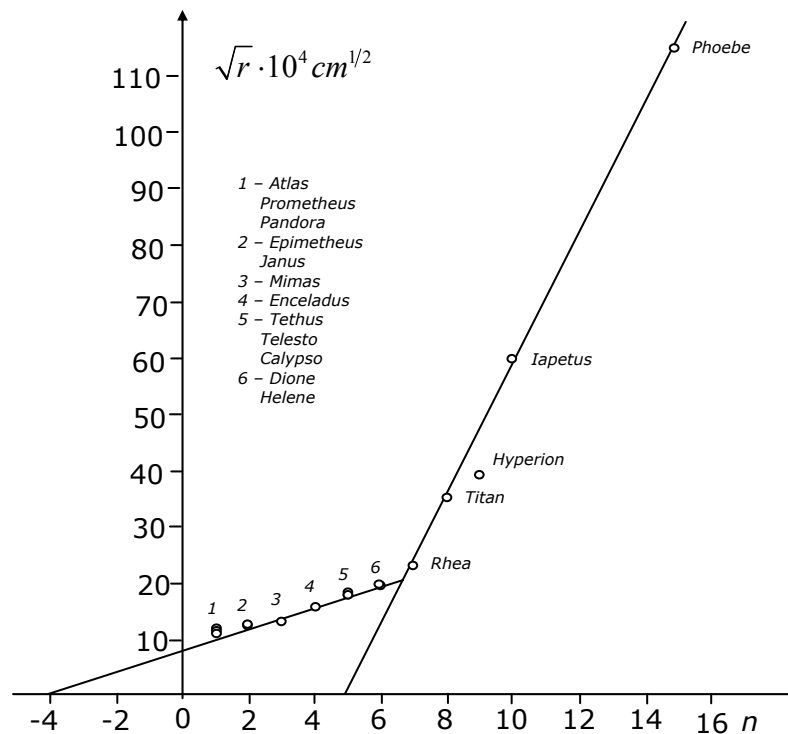

$\sqrt{r} \cdot 10^4 cm^{1/2}$

1 – Atlas
   Prometheus
   Pandora
2 – Epimetheus
   Janus
3 – Mimas
4 – Enceladus
5 – Tethus
   Telesto
   Calypso
6 – Dione
   Helene

Phoebe
Iapetus
Hyperion
Titan
Rhea

Fig. 2

Rings of Saturn - seven main rings are shown up, which one in a direction from a planet have following titles: *D, C, B, A, F, G, E.* It is supposed, that the rings of Saturn are formed predominantly by particles of water ice by the sizes from several micrometers up to tens centimeters and several meters. The ring *D* is in 7000 kms from boundary of a cloudy layer of a planet. The rings *A, B* and *C* are characterized by a composite inner structure also consist of thousand separate ringlets in width from several kilometers up to several tens kilometers. In whole width of each of rings *A* and *C* makes about 17 000 kms, and *B* - about 28000 kms. The thickness them does not exceed 1-2 kms. The ring *F* is characterized by a series of distinctive features; it consists of separate "strands" deviating from an elliptical trajectory and sometimes intertangled among them. Width it about 200 kms. A ring *E* also homogeneous without any details also takes a zone from three up to eight radiuses of Saturn. It is supposed, that the genesis of particles of this ring can be stipulated by volcanic belching in past on a satellite Enceladus, orbit which one passes in center of this zone. Interspaces in rings, bound with presence of resonances in a common dynamic system a planet - satellites, have a title of divisions. Sometimes in rings so-called "spokes" are watched". E.N. Sluta etc. "Comparative planetology", "Science", M., 1995, page 28-29.

""Spokes" in rings of Saturn - radial formations in rings of a planet, which one look dark in reflected and light in passing light on a background, ambient them. Length of "spokes" reaches 10 000 kms, width of 1000 kms. The time of their life does not exceed several clocks. It is supposed, that they are formed by clouds of particles by the sizes less than 1 mm "soaring" above main rings at the altitude all in tens of meters". Ibidem, page 65.

Satellite	Radius orb. 10^{10} cm	Calc. 10^{10} cm
Atlas (5)	1.38	0.91
Prometheus (5)	1.39	
Pandora (5)	1.42	
Epimetheus (6)	1.51	1.31
Janus (6)	1.51	
Mimas (7)	1.85	1.79
Enceladus (8)	2.38	2.34
Tethus (9)	2.95	2.96
Telesto (9)	2.95	
Calypso (9)	2.95	
Dione (10)	3.77	3.65
Helene (10)	3.77	

"Jupiter" group of Saturn: $r=r_0 \cdot n^2=1.39 \cdot 10^{10}$ (cm).
$\alpha=2.296 \cdot 10^{16}$ cm^2/sec.

Satellite	Radius orb. 10^{10} cm	Calc. 10^{10} cm
Rhea (2)	5.27	5.56
Titan (3)	12.22	12.5
Hyperion (4)	14.81	22.2 ?
Iapetus (5)	35.61	34.7
Phoebe (10)	129.52	139

Hyperion "falls out" of established legitimacy because of absence "quantumness". This case is very interesting from a point of view of new physics and indicates that as a result of disturbances "wave of de Broglie" macrobodies in space can significant be garbled. Prime cause of such contortions is the change of rotation of a body about the own axis. The affirming to that can be served by chaotic rotation of Hyperion around of an axis - unique case for satellites of planets. Hyperion and Phoebe have explicit indications of capture them bodily, instead of gradual growth (considerable eccentricity of orbits, backward motion of Phoebe).

On a figure 3 the relation $\sqrt{r}$ from integers for a satellite system of Uranus is shown.
For Uranus "earth" group: $r=r_0 \cdot n^2=0.04 \cdot 10^8 \cdot n^2$ (cm),
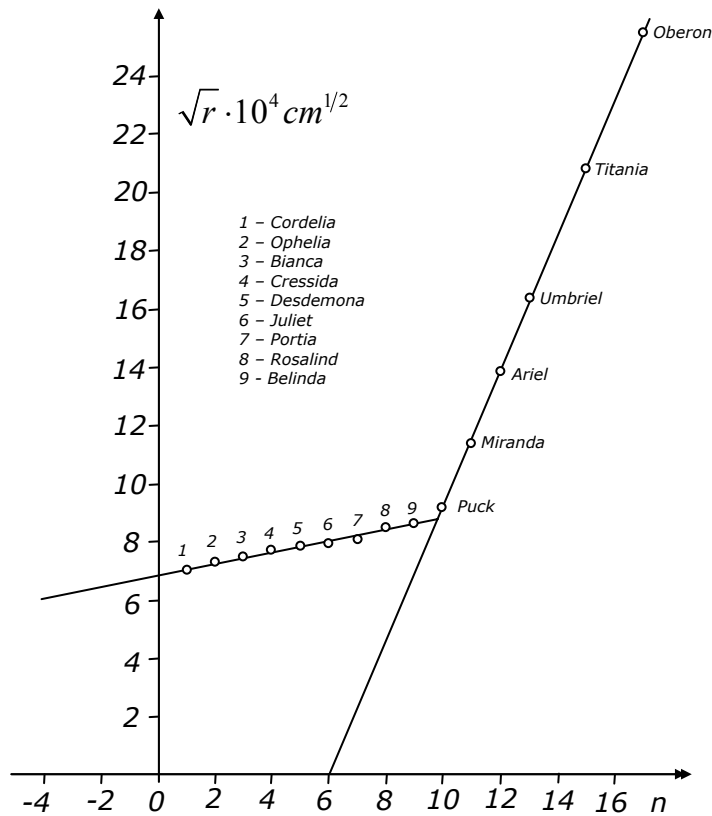$\alpha=1.522 \cdot 10^{14}$ cm^2/sec.

Fig. 3

The smaller quantum numbers of satellites "earth" and "jupiter" of group, apparently, as well as in case of Saturn, are implemented by rings of Uranus. "Rings of Uranus - 11 narrow main rings are known folded (except for reopened rings - 1986U2R and 1986U1R) particles by the sizes from 10 cm up to several meters, and about 100 of almost transparent belts, folded particles by the sizes about 0.02 mms, switching and reopened narrow rings. All rings have a very low reflectance (albedo less than 5 %). ...Not all rings have the circular form and not everyone lie in an equatorial plane. The rings differ also in width, which one for miscellaneous rings varies within the limits from 2 up to 100 kms". E.N. Sluta etc. "Comparative planetology", "Science", M., 1995, page 29.

Uranus with the satellites is unique formation in a solar System because of features of its rotation about an axis. "It is gone around of the Sun, lying "edgewise". The question is that the axis of its rotation will forms with a normal line to orbital plane a angle 98^0, i.e. lies almost in a plane of its orbit, and besides is directed to the side opposite to a customary direction of rotation axes of all other planets of a solar System. ...Unusually not only the rotation of Uranus, but also revolution around of it all it of five known satellites (now them is known more - V.K.), which one moves in comparison with satellites of other large planets backwards. The reason marked "of strangeness" of motions in a system of Uranus is not clarified yet. Moreover, these features are not stacked in one of offered hypotheses of a genesis of a solar System". V.G. Demin "Destiny of a solar System", "Science", M., 1975, page 22-23.

New physics gives simple explanation to a phenomenon of Uranus.

It together with satellites was formed in interstellar space (see further chapter about a cosmology) and bodily was captured by a solar System with a backward motion. At the expense of gravidynamic effect, orbit of Uranus was gradually turned so that the motion around of the Sun has become "normal" and now there is a tumble own of the gravidynamic moment of Uranus in parallel common to the gravidynamic moment of a solar System. At the end, the phenomenon of Uranus will vanish. It indicates also "falling out" of mass of Uranus from a series of masses of planets - giant, as during evolution of orbit it lost mass, but had not a capability of natural growth at the expense of a space material, therefore it does not have satellites in the same quantum condition.

Satellite	Radius orb. 10^{10} cm	Calc. 10^{10} cm
Cordelia (35)	0.497	0.49
Ophelia (36)	0.538	0.52
Bianca (37)	0.592	0.55
Cressida (38)	0.618	0.58
Desdemona (39)	0.627	0.61
Juliet (40)	0.644	0.64
Portia (41)	0.661	0.67
Rosalind (42)	0.699	0.71
Belinda (43)	0.752	0.74

The extremely large quantum numbers of satellites of Uranus of "earth" group correspond to quantum numbers of comets of sets of Saturn and Neptune crowded with a meteoritic material (see a figure 20.5, № 16 - № 21 [1]). Allowing, that the satellite system of Uranus was kept almost in "primitive" a condition, the similar result suggests, that on purlieus solar Systems we should find out a great many of a building material (as we shall see below, this remark is fair and to purlieus of galaxies, where we while nothing see). "The periphery of a solar System is for the present explored a little. It is possible, that, except for comets and gas-dust of clouds, on far purlieus of a solar System there are yet not unclosed planets". "Physics of space", "Soviet encyclopedia", M., 1976, page 80.

"The existence of a solar System is stipulated by activity of a solar gravitation, therefore naturally to determine boundaries of a solar System as boundaries of area, where the attraction of the Sun predominates. Radius of this area calculated without the registration of a light repulsion, is estimated in $2 \cdot 10^5$ a.u., and full mass of a diffuse substance, enclosed in it, appears to equal mass of the Sun ($2 \cdot 10^{33}$ g)". Ibidem, page 79.

About the reasons of large quantum numbers we look also below.

"Jupiter" group of Uranus:

$r = r_0 \cdot n^2 = 4.814 \cdot 10^8 \cdot n^2$ (cm), $\alpha = 1.670 \cdot 10^{15}$ cm^2/sec.

In "jupiter" group of Uranus it is difficult to expect satellites in the same quantum condition (there are no circumstances for their capture), but there can be is absent some quantum conditions, especially on a periphery, where the gravitational field reduced, as is watched actually.

Satellite	Radius orb. 10^{10} cm	Calc. 10^{10} cm
Puck (4)	0.860	0.77
Miranda (5)	1.298	1.20
Ariel (6)	1.912	1.73
Umbriel (7)	2.660	2.36
Titania (9)	4.358	3.90
Oberon (11)	5.826	5.82

On a figure 4 the relation $\sqrt{r}$ from integers for a satellite system of Neptune is shown.

In spite of the fact that the most massive satellite of Neptune - the Triton has a backward motion, that indicates its capture bodily or in the greater part, it is in the first quantum condition "jupiter" of group. "The interesting cosmogonic result was received by T. Maccord, studied motion of satellites of Neptune. In his judgement, due to tidal friction Neptune has gained a satellite a Triton, which one in past was moves on parabolic orbit". V.G. Demin, Destiny of a solar System, "Science", M., 1975, page 165.

Fig. 4
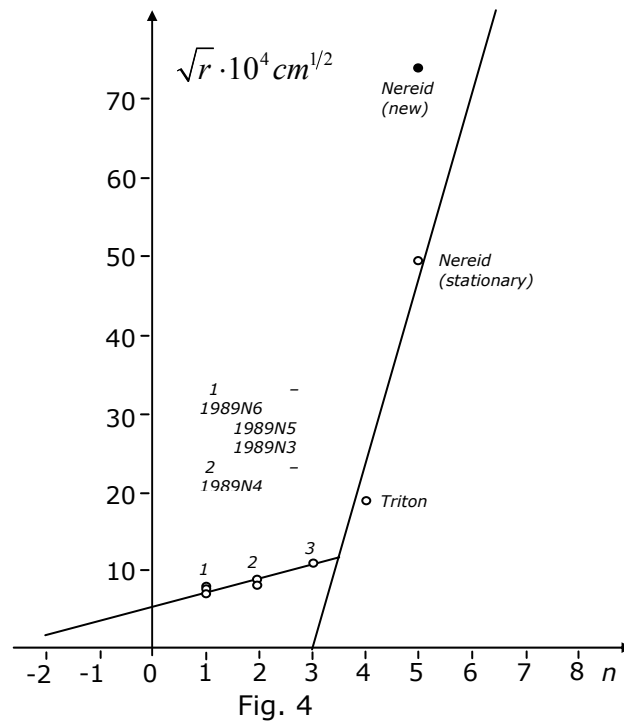
The satellite Nereid is more recently captured (on astronomical time scales) and has a very large eccentricity of orbit ($e=0.75$), therefore it is necessary to calculate its future stationary state under the formula: $r_0 = a\left(1 - e^2\right)$, where a - semimajor axis of orbit, equal $55.134 \cdot 10^{10}$ cm. All data for planets, satellites, comets and asteroids are taken from the book: E.N. Sluta etc. "Comparative planetology", "Science", M., 1995, page 78-105.

This formula is easily received from (20.9) [1] if to take into account, that $r_n = a(1-e)$. It also can be received, equating a difference of a potential energy of a gravitation in points of a perihelion and aphelion to a difference "kinetic" (in the terms of official science) energy in the same points. On notions of new physics on elliptical orbit there is a vibratory process of transition of a potential energy of attraction in a potential energy of a repulsion and on the contrary, similarly to oscillation of a small mass hanged on a spring. In absence of dissipative processes elliptical orbit would be steady, but as in a macroworld the dissipation of energy is necessarily, it is gradually conversed in circular.

The today's position of the semimajor axis Nereid is shown on a figure 20.1.4 dark point. The remaining satellites in a solar System have not so large eccentricities, therefore in the previous calculations the circular orbits were guessed.

"Earth" group of Neptune: $r = r_0 \cdot n^2 = 3.305 \cdot 10^8 \cdot n^2$ (cm).
$\alpha = 1.500 \cdot 10^{15}$ cm^2/sec.

Satellite	Radius orb. 10^{10} cm	Calc. 10^{10} cm
1989N6 (4)	0.482	0.53
1989N5 (4)	0.500	
1989N3 (4)	0.525	
1989N4 (5)	0.620	0.83
1989N2 (5)	0.736	
Proteus (6)	1.176	1.19

The smaller quantum numbers of satellites of "earth" group of Neptune, apparently, are implemented by rings of Neptune. "Under the data received from the space vehicle Voyager-2, are known three rings - external, mean and internal on distances from a planet: 63 000, 53 000 and 42 000 kms accordingly. Width of each ring does not exceed 10 kms. The inclination of rings to equator of a planet makes ~0^0. The outer ring is characterized by a composite inner structure: on a common background of a ring separate are watched intertangled "strands" in width 2-5 kms and placing apart from each other (lengthways on a ring) in hundreds kilometers". Ibidem, page 28.

"Jupiter" group of Neptune: $r=r_0 \cdot n^2 = 5.443 \cdot 10^{10} \cdot n^2$ (cm).
  $\alpha = 1.924 \cdot 10^{16}$ cm^2/sec.

Satellite	Radius orb. 10^{10} cm	Calc. 10^{10} cm
Triton (1)	3.548	5.44
Nereid (2)	24.121 (stat.)	21.8

To be convinced that the values α calculated from the actual constitution of satellite systems, Sun and planets are not a mathematical fiction for adjustment of the theory under an actual situation, we shall construct relation to mass of a central body for satellites "earth" and "jupiter" of group that shown on a figure 5.

1 – Sun
2 – Jupiter
3 – Saturn
4 – Neptune
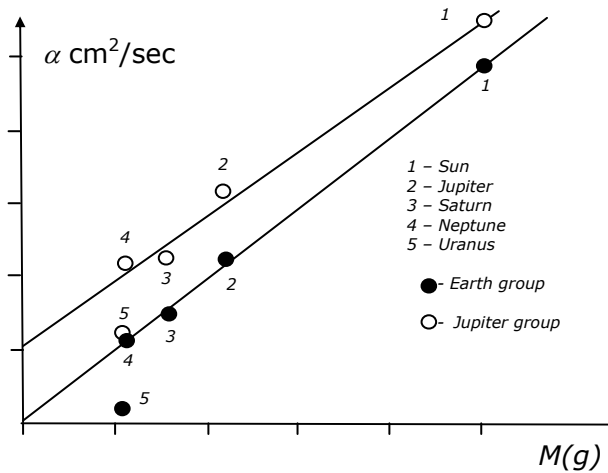5 – Uranus

● - Earth group

○ - Jupiter group

Fig. 5

Satellite system of Uranus (5, fig. 5) for the above mentioned reasons (the long-lived existence in isolation from natural growth) falls out of this relation. Not bad this graph to describe by analytical relation is it is very important in connection with a considered below capability of indirect definition of presence of extra-terrestrial civilizations, but for the lack of idea of calculations, we shall limit by an empirical-formula dependence α (cm^2/sec) satellite system from mass M (g) of a central body.
    This relation can be described by the formulas:

$$\lg \alpha_E = 0.89 \cdot \lg M - 10.7 \qquad (1),$$

$$\lg \alpha_J = 0.79 \cdot \lg M - 6.62 \qquad (2),$$

Accordingly, for satellites "earth" and "jupiter" of group.
By substituting (20.2) [1] in (20.5) [1], we shall receive:

$$r = \frac{\alpha^2 n^2}{GM} \qquad (3),$$

By substituting (1) and (2) in (3), we shall discover:

$$r_E = \frac{M^{0.78} \cdot n^2}{G \cdot 10^{21.4}} \qquad (4),$$

$$r_J = \frac{M^{0.58} \cdot n^2}{G \cdot 10^{13.24}} \qquad (5).$$

For example, for a star with mass in 5 times more Suns (such stars the majority) pursuant to these formulas of a planet of "earth" group will be in 3.5 times be further from a star, than in a solar System, and the planets "jupiter" of group in 2.5 times are farther. The more than mass of a central body, the further satellites are arranged from it. It we can watch and directly.
    In this connection and in view of intensive growth of a solar System in past, in basic, at the expense of the Sun, the planets gradually are deleted from a heavenly body. Therefore Mars demonstrates the future of the Earth, and Venus - far past. "From processing of materials, received by automatic interplanetary stations, follows that the most interquartile values of temperature on a surface of Venus lie in range 400 - 500 ^{0}C, and pressure - in an

interval 60 -140 atmospheres. From measurements held by interplanetary stations, follows, that in a Venus atmosphere the carbon dioxide (93-97 %) predominates. In it the oxygen, azote and water vapors is detected also". V.G. Demin, Destiny of a solar System, "Science", M., 1975, page 16.

The fine article in this occasion has written G.A. Scorobogatov in the log-book "Chemistry and life", № 12, 1983 "Where it, "a space miracle "?", in which one has shown, that the life on Mars could not reach the developed forms because of a too short period of favorable requirements on this planet. Apparently, through a pair of billions of years Venus for mankind will appear more favorable "house", than the Earth (if mankind remains by then).

We see, that, really, space matter separates on values α depending on mass of a body forms a satellite system. When the satellite system is already formed, the further build-up of its mass does not call problems. The problem is, whence satellite "knows" where to it to originate? The answer to this problem can be in initial quantumness of values α free macrobodies. It can arise only in the event that a particle to an identical wavelength of de Broglie sticks together i.e. "interference" of this there is. The probability of formation macrobody from particles with miscellaneous value α apparently, is very small, since they can not be against sufficient time. Quantumness macrobodies is, at the end, corollary quantumness of microparticles. In more detail this problem is considered at arguing motion of photons. Thus, the formation macrobodies, being a building material planets and satellites happens too to the help of the described above mechanism. As in a world of microparticles there is too need for the answer to a similar problem, it will be given in the relevant section.

By recollecting our reasoning on elliptical orbits in section of the description of atoms, we can draw a conclusion that the eccentricities of orbits of planets are called by continuous entry of matter in these planets. Together with matter they receive also exuberant mechanical energy. "Quantity of interplanetary dust which is dropping out annually on the Earth, makes $\sim 10^6$ tons per one year; quantity of dropping out matter about a diameter separate specks is more than 25 microns makes $\sim 10^3$ tons per one year; density of dust particles in a neighborhood of the Earth $\sim 10^{-24}$ g/cm^3". "Physics of space", "Soviet encyclopedia", M., 1976, page 370.

"The values of an eccentricity of the Earth oscillate about 0.028. Now this eccentricity is less mean and prolongs to decrease. Through 25 thousand years orbit of the Earth will become almost circular". A.V. Bialko "Our planet - Earth", "Science", M., 1989, page 38.

The small planets, concern to which one of a terrestrial planet will have an eccentricity of orbits inversely proportional to their masses. Really, their eccentricities satisfactorily are stacked in relation:

$$\ell = \frac{K}{m}, \text{ where } K=6.5 \cdot 10^{25} \text{ g.} \tag{6}$$

For planets jupiter of group huge masses, except for Pluto, therefore their eccentricities practically are not responsive to masses of these planets. For Pluto on relation (6) $K=1.25 \cdot 10^{27}$ g. It is possible to explain very small value of an eccentricity of orbit of Neptune to that by it is captured rather recently as a satellite a Triton, as the whole celestial body, that is confirmed with its abnormal mass and backward motion. Therefore exuberant mechanical energy of Neptune on certain time almost has come in conformity with energy of attraction to the Sun.

Here it is necessary to pay attention that the dissipative processes in each celestial body of a solar System are enough appreciable. It is possible to explain presence of eccentricities of orbits, declinations of orbits to a plane of a solar Equator, inclination of rotation axes to orbital plane, rotation of bodies around of axes only to one - stationary by a replenishment of all terms of a solar System by matter and maintenance in this connection their "exited" condition.

This "replenishment" is extremely non-uniform in time and is connected to passage of a solar System through dust clouds: "Some tens drifts epoch in a history of the Earth are revealed. They are repeated irregularly, the intervals between them oscillate from 40 thousand up to several hundreds thousand years. Between drifts epoch the climate returned more or less to current state. Last the drift epoch has put aside final moraines all 20 thousand years back". A.V. Bialko "Our planet - Earth", "Science", M., 1989, page 211.

For bodies, intensively absorptive a space material, such as the Sun and planets jupiter of group, is characteristic equatorial acceleration of rotation, since the entry of external matter is maximum in an equatorial plane: "The planets - giant differ by rather high angular rate of axial rotation and bound with this considerable squeezing. Interesting feature of their rotation is the so-called equatorial acceleration (with approach to equator will increase not only linear, but also angular rate of rotation of atmosphere". "Physics of space", "Soviet encyclopedia", M., 1976, page 65. From a point of view of orthodox science this fact completely is not clear, since because of friction in atmosphere the effect of equatorial acceleration should not be watched. From a point of view of new physics, the equatorial acceleration demonstrates "exited" a condition of space bodies at the expense of the external factors.

If we shall remain on positions of "birth" of a solar System, as whole, at any mechanism of this birth, all listed parameters of an exited state for a long time should accept zero value. If anything, in it a trump card of set up views on formation and constitution of a solar System. In this connection it seems surprising, that not gravitational, and incomparably feebler, in the data requirements, the gravidynamic field determines appearance of a solar System not only in general, but also in details. Nay, it is as though motor of a solar System, successfully competing with a gravitational field, the influence which one is reduced to "inhibiting action", i.e., in basic, to dissipative processes.

In center of galaxies it is not necessary to have considerable attractive mass. Each star can be considered practically as free, and the centripetal force is exchanged by force of the Lorentz for of a gravidynamic field. For this reason, is interquartile, in galaxies the astronomers and not finish counting of mass indispensable for apparent motion of stars. In this case α for each star (for the Sun $9 \cdot 10^{29}$ cm^2/sec) will be determined by density, rotation rate and traveling speed in a galaxy (designedly speech we shall not conduct about galactic "orbit"). The same factors determine also position of a star in a galaxy, therefore, its constitution. We look in the chapter dedicated cosmology more in detail.

It is necessary closely to look and at magnetic fields in space, the gravidynamic field exhibits itself outwardly in precisely the same way, therefore much that we refer to a magnetic field quite can appear a development of a gravidynamic field, as for this purpose it is not necessary of matters with magnetic properties or motion of electric charges.

Returning again to a solar System, it is possible to assert, that in process of growth of mass of planets and satellites at the expense of space matter pursuant to its natural distribution on chemical compounds and density, planets and the satellites increment radius of orbit. Radius of orbits of planets does not vary only in the event that mass of the Sun is invariable. The increment of its mass in a Holocene, apparently, is peer to losses, what indicates stability of a radiation constant. Any star is necessarily will forms around of itself a satellite system very similar to a solar System not only with similar distribution of radiuses of orbits and masses of planets, but also with similar distribution chemical compounds. As the Sun is an ordinary star in the Universe, chances to find the brothers on reason are very great.

In conclusion of this section we shall decide one interesting problem.

Let's suspect, that we close down some surface by n layers statistically of bodies, arranged in everyone layers which are not overlapping each other in a given layer, with mark-to-space ratio of the area in each layer $\alpha = \dfrac{s}{S}$, where $\alpha < 1$, and s - area overlapped by bodies in each layer. It is required to determine common mark-to-space ratio of the area β depending on number of layers n.

In due time, in the field of mathematics, the author has opened set of new calculuses similar differential and integral. They are so relevant in the applied plan, that given in the appendix to this book, good, that the philosophy of new calculuses is simple also it is possible to explain on several pages. On one of these calculuses the answer to receive easily:

$$\beta = 1 - (1-\alpha)^n \qquad (7).$$

We, in this case, will be interested by applying the formula (7) for an astronomy. Let's suspect that in given area of space mean density of matter makes ρ g/cm^3. If in some volume V there will be a spherical body of mass m, that, apparently, that: $\dfrac{m}{V} = \rho$,

$m = \dfrac{4}{3}\pi r^3 \gamma$ where: r - radius of a body, and γ - its density. $\alpha = \dfrac{\pi r^2}{V^{2/3}}$, and thickness of one

layer with the one body, arranged in it $\delta = V^{1/3}$. Number of layers $n = \dfrac{X}{\delta}$, where X -

distance. β let's accept equal 0.99, that means practically solid (on 99 %) filling of a segment welkin by stars or, on the contrary, its opacity because of a material, absorptive

light. By substituting all values in (20.1.7) and by designating $A = \left(\dfrac{4\pi\gamma}{3\rho}\right)^{1/3}$, after small

transformations, we shall receive: $0.01 = \left(1 - \dfrac{\pi}{A^2}\right)^{\frac{X}{Ar}}$. Taking the logarithm both parts of an

equation, we shall discover: $\ln 0.01 = \dfrac{X}{Ar}\ln\left(1 - \dfrac{\pi}{A^2}\right)$. Allowing, that the absolute value $\dfrac{\pi}{A^2}$

is very small, is replace $\ln\left(1 - \dfrac{\pi}{A^2}\right)$ by its approximate value from expansion in series of

Taylor: $\ln\left(1 - \dfrac{\pi}{A^2}\right) = -\dfrac{\pi}{A^2}$, then we shall discover finally:

$$X = 6.1403\frac{\gamma}{\rho}r \qquad (8).$$

The expression (8) allows making some evaluation calculations concerning a substance in space, including not luminous. So, for example, that statistically arranged in space stars practically completely have filled in a segment welkin (on 99 %), radius of the Universe should compound $3\cdot10^{21}$ light years, and for apparent radius $5\cdot10^9$ light years mark-to-space ratio will make only $3\cdot10^{-12}$ at $\rho = 2\cdot10^{-28}$ g/cm^3. If to consider, that apart $5\cdot10^9$ light years statistically arranged dark bodies fills welkin on 99 %, radius of such bodies should be not less than 0.8 mms. For larger bodies the Universe will be transparent. For our Galaxy mean density of sidereal matter on (20.1.8) will make 10^{-11} g/cm^3, approximately same it is necessary and on not luminous bodies. The reduced estimations do not contradict the guess of presence in the Universe of a great many of a substance which is not show of the presence by any radiation or screening of remote objects. This conclusion is relevant for comprehension of evolution of matter in the Universe and this problem we partially shall affect in further.

At last, we shall touch a problem of a history and future of the Earth. On all visibility, we live in epoch of small entry in a solar System of a new building material (except for hydrogen). About it, in particular, it is possible to judge on rather appreciable deceleration of rotation of the Earth and that moon is turned revolved to us by one side and has not changed the appearance during observations (here it is necessary to mean, that the main body of meteorites and dust should fall out on the invisible side of moon). "On equator at deceleration rotation of the Earth g decreases, on poles grows, and to constant remains at latitude 35^0. It is interesting, that the modern measurement accuracy of acceleration of gravity appears sufficient to note these changes - order 10^{-7} m/sec^2 per one year". A.V. Bialko, Our planet - Earth, "Science", M., 1989, page 62.

Receiving, that now annually on the Earth falls out $2\cdot10^{12}$ g of meteoritic matter (now this numeral it is necessary to update), it is uneasy to count up, that on the average for a history of the Earth should go matters approximately in 300 thousand times more, if the data on meteoritic matter are not mark down. On the other hand, ours estimate calculations display, that in a Galaxy mean density of matter on miscellaneous segments varies not less than in 10^{17} times. These numerals speak about extreme non-uniformity of entry of matter in a solar System. It now as though temporarily "has jumped out of space clouds" in rather pure space. The behavior of a solar System directly depends on density and structure of these "clouds". On it depends both brightness of the Sun, and growth of mass of planets and parameters of their "exited" condition with all consequences. Despite of relative meteoritic calm, it is possible to test enunciated notions on falling out of meteorites on the

Earth. Orbits of artificial satellites of the Earth with heightened meteoric hazard in three months will become rather safe etc. The constant controlling of a near space is necessary with the purpose of advance warning about approaching large asteroids, since falling out them on the Earth there is a lot of contingency, how many legitimacy. Thus, the future of a solar System can be forecast, looking forward on its trajectory in a Galaxy (certainly, and on the sides to look too it is necessary). In "Apocalypse" is asserted, that the end of light will be accompanied by stellar rains, and, eventually, on ground the large star will fall from a sky shining similarly to a lamp - surprising the precise description of collision of the Earth with a huge periodic comet on orbit by which one the plenty of asteroids places formed at its destruction under influence of the Sun. If the collision with a comet to the end of light will not cause, this description with that by success can be applied to collision of the Earth with moon, about what is written in the following paragraph.

In this connection, pay attention to moon. Similar, that it was captured in the greater part by a solar System pursuant to a figure 20.1 and with a quantum number 5 (as for the Earth), having a large eccentricity of orbit and declination it to a plane of an ecliptic. Such the course of events is not unique, and faster is objective, the affirming to that is served with such asteroids, as a Icarus, Eros, Adonis, Apollo, Hermes. Orbit of moon is fast evolved similarly to diffusion of orbits of comets, reducing an eccentricity and declination of orbit. In any moment of this evolution moon was intercepted by the Earth (not later than 10 millions years back, since the form of the Earth till now remembers a period more spin around of an axis) and new orbit already around of the Earth gradually has become circular and in a plane of an ecliptic. Moon also "remembers" this orbital interception, since its centre of gravity lies much closer to the Earth, than it follows from a present position. "One of overall objectives of lunar researches still has a solution of a problem of a genesis both evolution of moon and its connection with the Earth. A lot of hypotheses of a genesis and formation of moon is offered. In particular, the guesses are stated, that moon has exuded from mantle of the Earth (hypothesis of a abruption), that the Earth and moon were formed simultaneously as a double planet in tight proximity to each other by an accretion of similar parent matter (hypothesis of a joint genesis), that moon was formed somewhere in a solar System and only afterwards was captured by the Earth (hypothesis of capture), at last, that moon was formed by integrating a ring planetesimal (bodies of intermediate mass), there is no time encircling the Earth. While by any of noticed hypotheses can not without reserve be preferred. However that fact, that age is specimens of lunar rocks oscillates within the limits of 4.5-3.5 billions years also is close to age of the Earth, determinate absolutely, testifies for the benefit of a hypothesis of a joint genesis". "Physics of space", "Soviet encyclopedia", M., 1976, page 310-311. From a point of view of new physics the coincidence of age of the Earth, moon and meteorites testifies not to their joint genesis and that the formation of matter in the Universe was completed approximately 4 billions years back. About it is more detailed in the chapter dedicated cosmology.

Here it is necessary to mark that circumstance, that despite of the statement about identity chemical compound, specially for double planets, concerning moon the elaboration is necessary in the sense that its mass is insufficient for deduction of atmosphere, therefore existence, for example, of a fluid water on it is impossible but only as ice penetrating under a surface in equatorial area and closer to a surface on poles. Mass of moon grows at the expense of a space material going, in basic, on a back side and intended for the Earth, and the destiny it is determined: because of a strong interaction in a system Earth - moon and bound with it of a considerable dissipation of energy, in spite of the fact that now night star is deleted from us with velocity 3 cm/years, moon will fall on the Earth, previously having shattered in a zone Rosh because of tidal forces. Results of calculations of evolution a system Earth - moon George Howard Darwin (1845-1912) - second son famous Charles Darwin: "The Earth day at this stage should gradually become more than 55 present day, and the lunar tidal waves will lag behind a direction on moon. Moon will be aimed to return the Earth in a position of relative equilibrium, i.e. to accelerate its rotation, however solar gravitation gradually will reduce a mechanical energy of moon, which one will be expended on "untwisting" of the Earth and on tidal friction. In result moon will begin gradually to come nearer to the Earth and at the end will fall upon it". V.G. Demin "Destiny of a solar System", "Science", M., 1975, page 164.

The described mechanism, apparently, is customary at growth of planets and satellites at the expense of considerable portions of a space material.

The comments of the author to chapter 20.1 Planetary systems:

1. The attraction of the Sun does not influence orbits of satellites. *Many authors are tormented above resolution of the far-fetched problem: why the attraction of the Sun does not influence orbits of satellites of planets? For example, force of a universal gravitation to the Sun for Moon in 2.2 times more gravity to the Earth. On this basis some even doubt of a validity of a law of universal gravitation. The answer is very simple: from equalling of attractive force of a satellite to the Sun and centrifugal force which is operational on it at orbital motion together with a native planet, the running speed of an equal first solar velocity at the radius of this orbit irrespective of mass of a satellite is received. If «remove» a planet, the motion of a satellite will practically completely repeat orbital motion of this planet. (I thank to the Vladimir Andreev for a controversy on this problem).*

References:

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