Planetary Orbitals

1. The planetary systems as compound objects

A planetary system (PS) is a material system belonging to the class of the central-organized systems, or in short, centralized systems (CS). The systems from this class have two subsystem types as their components: the central subsystem and the satellite subsystems (which can also be CS). The specific attributes of CS class are:

- Uneven and permanent distribution of the interaction's intensity on the set of possible couples of elements within the system (interaction between the pairs of elements which contain the central system is much more powerful than the interaction between the couples of satellite elements);
- The radius of action of the interactions deployed with the central subsystem must include all the CS components.

In other words, the interaction between the satellite systems and the central subsystem is permanent and much more powerful than the one engaged between the satellite subsystems. As for PS, where the interactions are gravitational, attractive and with a very wide radius of action, both the central sub-system and its satellite elements would have the same radius of action (which is extended across the entire spatial range occupied by CS and even outside of it).

A PS with a star as its central element is a *first rank PS* (PS_1), and a CS made-up from a planet and its satellites make-up *a second rank PS* (PS_{II}) etc. In case of our planetary system, the central subsystem is made-up from a single *astronomic body* (AB) - that is the Sun. As we have previously mentioned, the satellite subsystems can be formed either from a single AB (Mercury, Venus, Mars[1]) or they can be PS_{II} (all the other planets with major satellites). From Kepler, we know that the planets paths are elliptical and from Newton, we know that in the ellipses focus, there is the mass center MC_0 of PS. Against this MC_0 of the PS and in relation to the Sun's Equator plane (where the solar spin axis works as a normal line), each MC_k of the PS components performs its own orbital motion.

2. Reference systems for the astronomical bodies

Each AB from the composition of a PS_I or PS_{II} is an object, and as any object, it has an internal reference system (RS). As we have seen in chapter 3, this RS has two components: reference T and reference R. As for AB, the natural T reference is its mass center (MC), and the reference R is made-up from the spin axis (proper rotation axis of AB) and two planes which are perpendicular one another - the normal equatorial plane on the spin axis, whose intersection with the surface AB provides the parallel zero (the equator, latitude reference) and a plane which includes the spin axis, whose intersection with the AB surface provides the meridian zero (the longitude reference). At the intersection of the spin axis with the Equator plane, the reference T may be found, the null rotation point of AB.

Comment 2.1: This type of RS of an AB is obviously an artificial, abstract RS, valid for temporal intervals which are "short" in terms of astronomy (decades), but it is no longer valid in case of intervals such as millenniums or even longer intervals, because the spin axis deploys a rotation movement around another axis - *the median spin axis* - rotation which is called *precession*. This motion determines a corresponding oscillation of the Equator plane against a normal plane placed on the median axis - the

[1] Mars' satellites are insignificant both in terms of dimensions and mostly, as regards their mass.

median plane. Certainly, the median axis is normal on the median plane on the same point - the reference T of AB. All these types of RS of the astronomic bodies (AB, PS, GX etc.) share the presence of a spin axis (either real or median) and of an equator or median plane, because all these have a proper rotation motion correlated with a translation motion. The precession motion (which is emphasized for the terrestrial spin axis with a period of about 26.000 years) is also present to other types of astronomic bodies, such as the precession movement of the orbital axis (evidenced by the advance of the perihelium) exist.

As we have mentioned above, a PS is an object which consists in AB-type of objects, which means that we shall therefore have an internal RS of the compound object, but which is external in relation to its elements. Similarly with the definition of the internal RS for AB, there will also be the references T and R applicable for PS. The reference T is the mass center of PS (the null revolution point), and the reference R will be made-up from the median plane of the orbital motions and the median axis of the orbital motions, which is normal on this plane in the reference T of PS. The median plane of PS is the same as the median plane of the central body. Against this plane and against the orbital median axis, each PS element, including the central object, carries out its own revolution motions - the orbital motions. The orbital motion (of an AB or PS_{II}-type of object) means the revolution motion of the object's reference T, correlated with the rotation motion of its reference R against the reference R of PS_1, or against an external reference R (sidereal reference). In case of a couple *central object_satellite object* (CO_SO), the reference R contains also (besides the orbital median axis, the orbital median plane as well) the CO_SO axis which unites the internal T references of the two couple elements[2]. Another reference element R valid for the orbital motion is the *perihelium-afelium* axis (PA), whose rotation determines the precession of the orbital axis.

3 Planetary orbitals

The validity conditions of the *orbital* term <u>within the objectual philosophy</u> must be settled in the same way as we did in Annex X.24 of *The Introduction into the Objectual Philosophy*:

1. The meaning of the *orbital* term within this paper is <u>different</u> from the meaning given to the same term by the current atomic and molecular physics, but there are also resemblances. In both situations, the word *orbital* is associated with a spatial domain in which the motion of an element of the system is deployed (is framed, included). While in case of the current physics, the spatial domain of the orbital of an atomic electron comes out as a result of the Schrödinger equation for a certain set of quantic numbers, the element's motion being considered as purely probabilistic, as regards the objectual philosophy, the same domain is achieved as a result of the multiple but deterministic motions of the same element. In case of the PS elements, the same *orbital* term is associated with a collection of invariant properties of the orbital motion processes, invariance which is considered to last a very long time[3].

2. This article was exclusively focused on the motions deployed by AB, considered as "native", more precisely of those bodies which have occurred during the formation process of PS, but not the ones of subsequent captures[4].

We have previously seen that the orbital motions of the bodies involved into a PS have a lot of attributes, some of them are invariant for a certain element (the major semi-axis of the orbit, eccentricity, duration of an orbital revolution, the median plane and the orbital median

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[2] Axis which is the position vector of the satellite object against the central body, position which is defined either against an internal RS of PS or against an external RS (sidereal).

[3] If the secular perihelium advance of AC_k is α_k degrees, a complete rotation of the axis AP_k needs $T_{pk}=360/\alpha_k$ centuries. These values provide the reason why very long time intervals are required in order to deal with a spatial domain of an orbital motion.

[4] This is the case of low-sized satellites, with irregular shapes (such as, for instance, Mars' satellites), which have been captured after the PS formation, probably, from the asteroids belt.

plane) and other variables (angular position of the axis CO_SO, of the PA axis, precession of the orbital axis).

The motions of the mass centers MC_k of the planets (more exactly, their paths), are fitted for however long temporal intervals into specific spatial zones (approximately a toroidal shape), whose projection on the solar equator plane (for two planets only) are displayed in figure 3.1. These spatial zones occur as a result of many types of motions which each satellite system of the Sun is able to perform:

- Orbital motion on the elliptical pathway;
- Rotation motion of the axis PA_k (given by the perihelium advance);
- Precession motion of the orbital plane (as well as of the orbital axis).

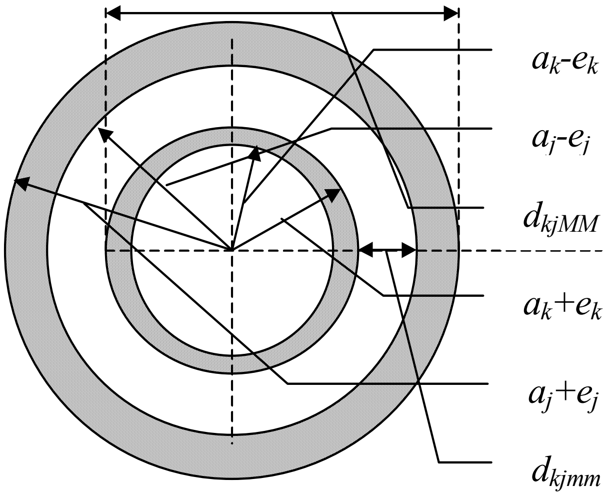

Fig. 3.1

The scope of this annex is only to trace a clear limit of the spatial area occupied by each element against the internal reference T of PS (MC_0), and therefore, the value intervals which will host the interactions intensity between the system's elements may be computed. Well, the abstract object made-up from the reunion of all the invariant attributes which is characteristic for the orbital motion of a planet within a PS, shall be called ***planetary orbital***. Based on the issues presented so far, a planetary orbital consists of the following invariant attributes:

- Spatial zone where the orbital motion is ranged (defined by the major semiaxis of the orbit, eccentricity and the tilting of the orbital plane), attributes defined against MC_0 and against the solar equatorial plane.
- Orbital period or its reverse - *orbital frequency*.

Since the orbital motion belongs to a PS_I or PS_{II} element, the corresponding orbital will be a first or second rank orbital.

Table 3.1

k	CA	m [kg]	a [km]	ε	e[km]	d_{kjmm}[10^6km]
1	Sun	$1.989 \cdot 10^{30}$	-	-	-	-
2	Mercury	$3.302 \cdot 10^{23}$	$5.79 \cdot 10^{8}$	0.2056	$1.19 \cdot 10^{7}$	37.66
3	Venus	$4.869 \cdot 10^{24}$	$1.082 \cdot 10^{8}$	0.0068	$7.36 \cdot 10^{5}$	38.17
4	Earth	$6.042 \cdot 10^{24}$	$1.496 \cdot 10^{8}$	0.0167	$2.498 \cdot 10^{6}$	54.52
5	Mars	$6.419 \cdot 10^{23}$	$2.279 \cdot 10^{8}$	0.0934	$2.128 \cdot 10^{7}$	491.5
6	Jupiter	$1.899 \cdot 10^{27}$	$7.784 \cdot 10^{8}$	0.0484	$3.77 \cdot 10^{7}$	533.7
7	Saturn	$5.685 \cdot 10^{26}$	$1.427 \cdot 10^{9}$	0.0541	$7.73 \cdot 10^{7}$	1231
8	Uranus	$8.683 \cdot 10^{25}$	$2.871 \cdot 10^{9}$	0.0472	$1.35 \cdot 10^{8}$	1453
9	Neptune	$1.024 \cdot 10^{26}$	$4.498 \cdot 10^{9}$	0.0086	$3.86 \cdot 10^{7}$	-99.68

10	*Pluto*	$1.25\cdot10^{22}$	$5.906\cdot10^{9}$	*0.2488*	$1.47\cdot10^{9}$

The data of the occupied orbitals (first rank) from our planetary system are shown in table 3.1, where k is the running number of the astronomic body which holds the orbital, a is the orbit's major semiaxis and ε and e represent both the numerical and geometrical eccentricity of the orbit. The parameter d_{kjmm} shall be explained later on.

According to the aspects mentioned in chapter 4 from *The Introduction into Objectual Philosophy*, it results that the orbitals (either they are planetary, atomic or neutronic) are *processual objects* which gathers the invariant properties of some processes - orbital motion processes of the elements from a dynamic centralized system.

4 Distribution of the interaction intensity on the couples of elements belonging to PS

The interaction force (in this case, our only concern is the modulus) is given by the Newton law of universal attraction:

$$F_{kj} = G\frac{m_k m_j}{d_{kj}^2} \tag{4.1}$$

where $G=6.672\cdot10^{-11}$ is the gravitational attraction constant, m_k and m_j are the masses of the couple's elements, and d_{kj} is the distance between the elements of a couple. When the next calculus has been performed, the tilting difference of the orbital planes against the solar equator plane was ignored because the resulted difference is insignificant for the scope of this article.

If the lengths implied in the relation 4.1 may be easily established in case of the couples with a central element, these being ranged within a_k+e_k and a_k-e_k (the Sun distance against MC_0 may be neglected as compared to the interplanetary distances), as regards the satellite elements, we may notice from the figure 3.1 that the projections of their positions across the solar equator plane are framed within the circular crowns ranging also within the radiuses $a-e$ and $a+e$. In this way, two significant distances will exist, namely, d_{kjmm} (minim minimorum) and the distance d_{kjMM} (maxim maximorum) which will be the limits of all the other current distances between the elements of the couple kj. These extreme distances would be correlated with the gravitational interaction forces limits, maximum or minimum, deployed between the elements of a couple kj, whose modulus is:

$$F_{kj\max} = G\frac{m_k m_j}{((a_j - e_j) - (a_k + e_k))^2} \tag{4.2}$$

$$F_{kj\min} = G\frac{m_k m_j}{((a_j + e_j) + (a_k + e_k))^2} \tag{4.3}$$

Based on the data presented in table 3.1 and by considering the relations 4.2 and 4.3, we would be able to calculate the domains which limit the interaction intensities between the possible pairs of elements belonging to our planetary system. We have an ordered series of $n=45$ potential couples (C_{10}^2), displayed in the table 4.1. At each potential couple, we are only interested in the modulus of the interaction force. The distribution of the interactions intensity is shown in the figure 4.1, where the mutual attraction forces shall be deployed on the vertical axis between the couples' elements, which are expressed in newtons on a logarithmic scale, whereas, on the horizontal, there is the index n of the possible pairs of the planets from PS given by the table 4.1 (the asteroids were let aside because the calculus would have been too complicated).

One may notice that the interactions deployed between the satellite elements (PS planets) are much more weaker than the interactions deployed with the central subsystem, except the Sun-Pluto pair, where the interaction is lower than many of the interactions deployed by the couples of satellite elements.

Comment 4.1: According to the astronomic discoveries from the last decade, we may say that Pluto is a planetoid rather than a planet, member of a group of planetoids which makes an orbital motion inside the Kuipert belt. There is at least one member in this group which has bigger sizes than Pluto.

Table 4.1

n	*AB Couple*	*n*	*AB Couple*
1	Sun - Mercury	24	Venus - Pluto
2	Sun - Venus	25	Earth - Mars
3	Sun - Earth	26	Earth - Jupiter
4	Sun - Mars	27	Earth - Saturn
5	Sun - Jupiter	28	Earth - Uranus
6	Sun - Saturn	29	Earth - Neptun
7	Sun - Uranus	30	Earth - Pluto
8	Sun - Neptune	31	Mars - Jupiter
9	Sun - Pluto	32	Mars - Saturn
10	Mercury - Venus	33	Mars - Uranus
11	Mercury - Earth	34	Mars - Neptun
12	Mercury - Mars	35	Mars - Pluto
13	Mercury - Jupiter	36	Jupiter - Saturn
14	Mercury - Saturn	37	Jupiter - Uranus
15	Mercury - Uranus	38	Jupiter - Neptun
16	Mercury - Neptune	39	Jupiter - Pluto
17	Mercury - Pluto	40	Saturn - Uranus
18	Venus - Earth	41	Saturn - Neptun
19	Venus - Mars	42	Saturn - Pluto
20	Venus - Jupiter	43	Uranus - Neptun
21	Venus - Saturn	44	Uranus - Pluto
22	Venus - Uranus	45	Neptun - Pluto
23	Venus - Neptun		

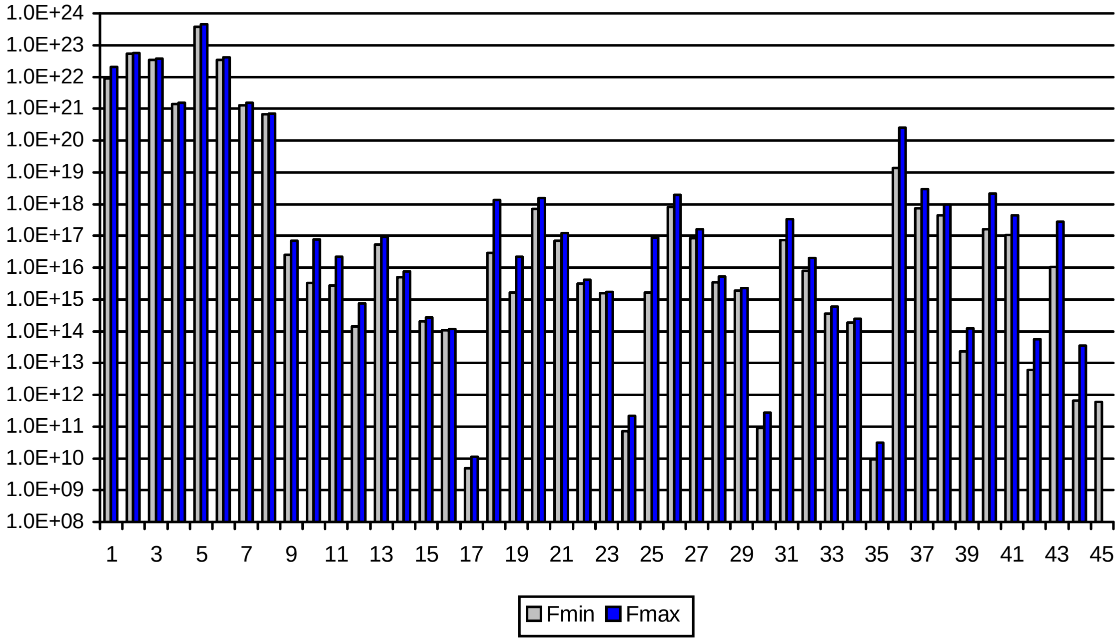

Fig. 4.1

We may also note that as regards the couple 45 (Neptun-Pluto), the maximum value of the interaction was not mentioned any longer (on the long term) because the spatial zones (circular crowns) where the orbits of the two planets are being framed are conjoint (the intersection of the two zones is different from zero), the minimum distance reaching to zero, otherwise speaking, the two AB may collide one another under fatal circumstances.

5 Frequency distribution of the planetary orbitals

The sidereal periods of the orbital revolutions for the planets from our solar system (taken from the website *nssdc.gsfc.nasa.gov*) are given in the table 5.1. These periods have been converted into frequencies (third column), and for allowing a much easier observation of the relation between them, those values have been brought into a more „usual” domain by means of acceleration (temporal compression) with a 10^{12} factor. The compressed values are given in the fourth column of the table.

For those which are accustomed to work with numbers in base 2 is easy to note a similarity between the values of the planets' orbital frequencies (according to a compressed version) and the corresponding values of the exponent of 2 (given in column 5).

Table 5.1

Planet	Sidereal revolution [days]	Orbital frequency [Hz]	Orbital frequency $*10^{12}$[Hz]	Powers of 2 [2^n]
Mercury	*87,969*	*1,315699*10^{-7}*	*131569,9*	*131072 (n=17)*
Venus	*224,701*	*5,150877*10^{-8}*	*51508,8*	*65536 (n=16)*
Earth	*365,256*	*3,168756*10^{-8}*	*31687,6*	*32768 (n=15)*
Mars	*686,680*	*1,684776*10^{-8}*	*16847,8*	*16384 (n=14)*
Jupiter	*4332,589*	*2,671399*10^{-9}*	*2671,4*	*2048 (n=11)*
Saturn	*10759,22*	*1,075735*10^{-9}*	*1075,7*	*1024 (n=10)*
Uranus	*30685,4*	*3,771850*10^{-10}*	*377,2*	*512 (n=9)*
Neptune	*60189*	*1,922955*10^{-10}*	*192,3*	*256 (n=8)*
Pluto	*90465*	*1,279398*10^{-10}*	*127,9*	*128 (n=7)*

The same distribution displayed in the table 5.1 is represented as a graphical plotting (similarly with a spectrum with the logarithmic axis of its frequencies) in the figure 5.1. The percentage error of the orbital frequencies against the corresponding 2^n values is 0.38% for Mercury, 0.078% for Pluto, 2.8% for Mars, 3.3% for Earth, 5% for Saturn and in case of Jupiter, the values reached even to 30%.

As we are going to see further, the accurate correspondence between the figures from column 4 and the ones from column 5 is not very relevant for the scope of this presentation, but their order of magnitude is important, some possible explanations may be given in case of the detected deviations.

The good enough proximity of the orbital frequencies to the values from the series 2^n, mostly for Mercury, Earth, Mars, Saturn and Pluto has led to the formulation of the following work hypotheses:

1) A planetary orbital with the number n is associated with a *main orbital frequency* which is given by the following relation:

$$f_p(n) = f_0 \cdot 2^n \tag{5.1}$$

where f_0 is a fundamental orbital frequency specific to a certain planetary system. As for our planetary system, the value is estimated to be $f_0 \simeq 1.0 \cdot 10^{-12}$ Hz (that is Mercury's frequency divided by 2^{17}).

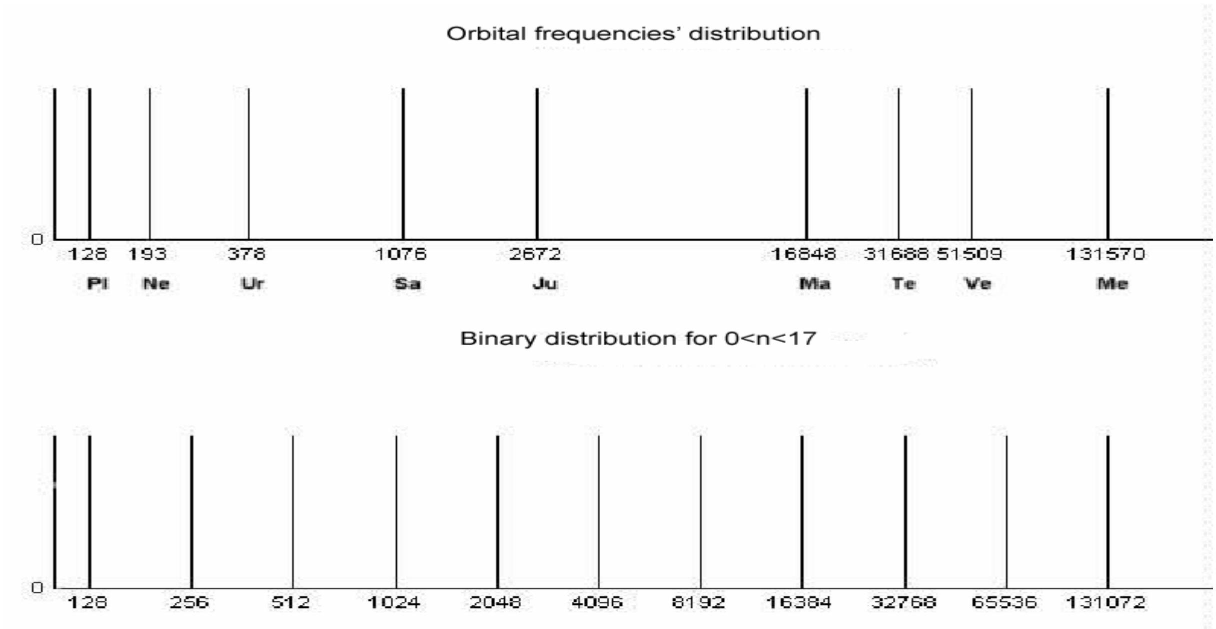

Fig. 5.1

2) The real orbital frequency of the planet which occupies the orbital n is given by the relation:

$$f_n = f_p(n) \pm \Delta f_n \qquad (5.2)$$

where Δf_n is the deviation of the real frequency against the main frequency given by the relation 5.1, deviation which can be written into the binary numeral system as:

$$\Delta f_n = \sum_{i=0}^{n-1} a_i f_i \qquad (5.3)$$

where f_i are the main frequency of the inferior (exterior) orbitals of orbital n, and a_i are some coefficients (we might call them spectrals) with the values $a_i = [-1,0,1]$, whose distribution is given in the table 5.2.

Table 5.2

	a_{16}	a_{15}	a_{14}	a_{13}	a_{12}	a_{11}	a_{10}	a_9	a_8	a_7	a_6	a_5	a_4	a_3	a_2	a_1	a_0
Me	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	1	0
Ve		0	0	-1	-1	0	-1	-1	0	-1	-1	0	0	-1	0	-1	-1
Te			0	0	0	0	-1	0	0	0	0	-1	-1	-1	0	0	0
Ma				0	0	0	0	0	1	1	1	0	1	0	0	0	0
P_{13}					-	-	-	-	-	-	-	-	-	-	-	-	-
P_{12}						-	-	-	-	-	-	-	-	-	-	-	-
Ju							0	1	0	0	1	1	1	0	0	0	0
Sa								0	0	0	0	1	1	0	1	0	0
Ur									0	-1	0	0	0	0	-1	-1	0
Ne										0	0	-1	-1	-1	-1	-1	-1
Pl											0	0	0	0	0	0	0

Comment 5.1*:* In order to make clear the way how the coefficients a_i from the table 5.2 were obtained, let us take for example, the case of planet Venus. Its real orbital frequency according to the table 5.1 is $51509 \cdot 10^{-12}$ Hz, and the theoretical frequency for its orbital (given by the relation 5.1) is $65536 \cdot 10^{-12}$ Hz. The difference Δf_{16} given by the relation 5.3 is $65536-14027=2^{16}-2^{13}-2^{12}-2^{10}-2^{9}-2^{7}-2^{6}-2^{3}-2^{1}-2^{0}$.

Based on this table and by also considering the table 5.1 and the figure 5.1, it comes out that between the orbitals which are currently occupied by Mars and Jupiter, there are two available frequencies, which are related to two orbitals, namely the orbitals with $n=12$ and $n=13$, orbitals which could have been occupied once, in the distant past of our solar system, by two planets and not by a single one, as the Titius-Bode rule stipulates. The collision of the two planets (P_{13} and P_{12}), due to the orbitals conjunction[5] would be a more plausible explanation for the asteroids occurrence, rather than the spontaneous explosion of a single planet. A small part from the debris generated by that catastrophe currently makes-up the asteroids belt and a part from the amount of the satellites of Mars, Jupiter, Saturn, Uranus, Neptune (it is very likely that even the Moon to have its origin over there). We must also find out that the conjoint orbitals are not a rarity, because there is also another case in our planetary system, the one of the orbitals with $n=7$ and $n=8$ (Neptune and Pluto), conjunction which under fatal circumstances could lead to another catastrophe of the same kind.

By analyzing the table 5.2, few very interesting facts may be noticed, which are:

- Spectral components which are associated with the orbital frequencies of the two missing planets P_{13} and P_{12} may be found in the frequency deviation of the planet Venus;
- The sign of the non-zero coefficients a_i (which corresponds to the sign of the frequency difference) could be related to the influence of the external planets, in phase or anti-phase on the orbital motion of a given planet;
- The dominant influence on the deviation of the orbital frequency in case of the Earth is exerted by Saturn, Uranus has an influence on Jupiter, and Uranus is influenced by the objects from the Kuipert belt (placed on the orbital with $n=7$).

If these assumptions shall be confirmed (more exactly, if *they are accepted* by the scientific community), it results that the orbitals with $n=6...0$ still exist, but there are no data about their occupation degree. Among these orbitals, the most important is the one with $n=0$, orbital whose frequency is the fundamental frequency of PS. The spatial area of this orbital is located at the border of our planetary system and it is occupied (according to the author) by the so-called *Oort cloud*, the source of the comets from our solar system[6]. The existence of this “cloud” has (also according to the author) a very serious theoretical background, namely, it is located in the impact and equilibrium zone between two opposite fluxes: *the divergent solar flux*, made-up from the total amount of the emissions generated by Sun (photons, electrons, protons, atomic nuclei, atoms, so on, also known as *solar wind*) and the convergent flux of the inter-stellar matter drawn by the global mass of the planetary system, or intersected by this system in its motion through the space. The equilibrium zone between these counter fluxes, where there are collisions between the elements of the two fluxes (elements which create in this area a G-type medium) is a spatial domain in which condensation (accretion) conditions of the constitutive atomic elements may appear, condensation which may explain the occurrence of the comets. Obviously, only just a fraction from this condensated objects has comet-type orbits (which means that their orbits reach to the Sun proximity), most of them being deployed on orbits distributed around the peripheral orbitals ($n=0,1,2$ etc.).

Comment 5.2: The reader who has already read the book entitled *Introduction into Objectual Philosophy* may easily notice that the two above mentioned flux types belong to the class of input or output fluxes of the CS-type material system - our planetary system. At the impact of the two fluxes, which are

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[5] Two orbitals are *conjoint* if the intersection of the orbitals’ spatial domain is not void. If that intersection is void, then, the orbitals are *disjoint* (normal scenario).

[6] According to Kepler’s relation :

$$\frac{a_n^3}{T_n^2} = ct$$

we may estimate a_0, the major semiaxis of the orbital $n=0$ which results (estimatively yet somehow surprisingly) to be equal with about 1000 AU.

both spatially scattered, a real stochastic bounding surface (RBS) (as we have seen in chapter 7) is created. The thickness of this stochastic RBS is momentarily hard to be estimated but it is likely that all the peripheral orbitals of our planetary system to be included within this thickness.

Unlike the spatial areas of the known planetary orbitals, concentrated in the proximity of the solar equator plane, the peripheral orbitals contain ovoid spatial areas, because the solar flux has a distribution which is presumed to be quasi-isotropic. An example for such an impact area between two counter fluxes is the one between the particles component with a solar flux charge and the terrestrial magnetosphere; the form of the equilibrium surface between the particles flux and the terrestrial magnetic flux may suggest the way how the equilibrium surface from Oort zone may look like.

The thickness of this spatial zone which is occupied by the peripheral orbitals is momentarily difficult to be estimated, because it is necessary to know both the spatial distribution of the density of the global solar flux and of the inter-stellar matter density (we didn't reach to that section yet). All it can be said is that this area is vague delimited (the collision processes deployed between the elements of the two fluxes are purely probabilistic) and it may be noticed around some stars (it has a halo-type configuration). This equilibrium surface, which shall be called further as *Oort zone*, contains, as we said before, a G-type (gaseous) medium, generated as a result of the repeated collisions between the elements of the two counter fluxes, medium which allows the condensation (on a long time) of a fraction of its elements, making-up L (liquid) or S (solid) media. However, a medium which allows collisions between its elements means that it has a pressure, and where there is a pressure, there is also a thermal contribution, which is evidenced through its thermal radiation. Thus, another hypothesis occurs: *the quasi-isotropic radiation of about 3.5 K which was experimentally noticed could come out from this area* (since we are inside this "enclosure" it is natural to have the feeling that the radiation comes from everywhere).

The funny part of this assumption is that it can be only experimentally confirmed, by means of measurements on the background thermal radiation made outside the Oort zone, which means that we have to wait long time until the performance of this test, if the ether existence will be continuously ignored and the mankind would not be able to achieve the propulsion against this medium.

Comment 5.3: As regards the propulsion of the interplanetary spaceships which the mankind has been testing in the last decades, a funny analogy can be made. Imagine yourselves a sea cruise over the ocean, and those people would have not discovered the propulsion against the ocean water (by means of rowing, propelling devices or wind force), but rather by means of the usual method of the current cosmic flights, which is an exclusively inertial method, which means to load that spaceship with a lot of objects which will be thrown backward in order to move forward. The rational solution used by people even since the ancient times was the motion against the environment, either it is soil, water or air; yes, indeed, but at that time, the scientists able to uphold that this medium does not exist and there is a void instead of it, had not been born, and even if they would have been born, they would have been sent to the Gods who were needing their intelligence.

6 Conclusions

The first conclusion of this presentation is that it provides a logical and rational explanation for the occurrence of the asteroids belt in our planetary system. The generation of comet cores by means of simple accretion (condensation achieved either by collisions or by gravity) is possible, we have already said that this process could take place into the Oort zone, but the occurrence of AB made-up from compact rocks, with massive metallic inclusions (such as some meteorites which fell on the Earth) is not possible unless there is a high pressure and temperature, conditions which may be found only inside a planet. This without mentioning that there is no accretion conditions in the asteroids belt zone, because the solar wind wipes out any particles which would have the tendency to become overcrowded. We do not know for sure what was the distribution of the planetary orbital frequencies before the collisions of the two planets, but what is certain is that the orbital frequencies of the planets which currently exist were of other values than the present ones (possibly, much closer to the values predicted by the relation 5.1), because a PS is a profoundly interactive system, this means that any change is reflected on all the other components. The biggest difference in the orbital frequency which was noticed in case of Jupiter is natural in a way, this planet being the most affected one by the vanishing of its two neighbours, being forced to drastically alter its orbit in order to re-establish the equilibrium within the system (moving forward on an orbit close to the Sun).

The second conclusion is that (at least for the time being), the relation 5.1 has a purely informative character and its is valid only for our planetary system, its single utility is to emphasize the two vacant frequencies from the distribution given in the table 5.1 and to estimate the possible frequency rates of the unknown orbitals (with $n=6...0$). Currently, there is no theoretical motivation in order to justify whether the constant rised at power n is even 2 or just close to this value, according to the relation 5.1. An argument for 2 could be the values of the orbital frequencies of the large Jupiter satellites (which can be also considered as native bodies during the PS formation, rather than post-capture bodies), given in the table 6.1, where one may notice a good proximity of Jo, Europe and Ganymede against the binary distribution of the orbital frequencies.

Table 6.1

Jovian satellite	Sidereal period [days]	Sidereal frequency [Hz]	Sidereal frequency $\times 10^{10}$ [Hz]	Powers of 2 [2^n]
J_I (Io)	1.76914	$6.5422 \cdot 10^{-6}$	65422	65536 (n=16)
J_{II} (Europe)	3.55181	$3.2586 \cdot 10^{-6}$	32586	32768 (n=15)
J_{III} (Ganymede)	7.15455	$1.6177 \cdot 10^{-6}$	16177	16384 (n=14)
J_{IV} (Calisto)	16.6890	$6.9351 \cdot 10^{-7}$	6935	8192 (n=13)

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