# POLYTRONIC MODEL of MECHANICAL MOMENT

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For successful solution of any task it is necessary logically clear and mathematically simply to formulate this task. In this case our task consists in reducing concepts of the mechanical moments of bodies, used in generally accepted paradigm, to one universal parameter.
The angular moment (angular momentum) of a point mass concerning a center of rotation is determined as a vector product of a radius-vector of a point by a momentum of this point. The vector of an angular momentum is determined by a rule of a right corkcrew.

$$\vec{p}_{si} = \left[\vec{r}_i \cdot M_i \cdot \vec{v}_i\right] \qquad |(kg \cdot m^2)/s|$$

The speed $v_i$ can be expressed through an angular velocity of a point $\omega_i$, and, therefore, angular momentum of a point mass can be written through a vector of an angular velocity.

$$\vec{p}_{si} = M_i \cdot r_i^2 \cdot \vec{\omega}_i = J_i \cdot \vec{\omega}_i \qquad |(kg \cdot m^2)/s|$$

where $J_i = M_i \cdot r_i^2$ – moment of inertia of a point mass concerning axis of rotation.
The moment of momentum (spin) of the material system concerning a pole (in this case concerning a center of rotation) is equal to the geometrical sum of moments of momentum of all points mass of the system concerning the same pole.

$$\vec{L} = \sum_{i=1}^{n}\left[\vec{r}_i \cdot M_i \cdot \vec{v}_i\right] = \Sigma_1^n J_i \cdot \vec{\omega}_i \qquad |(kg \cdot m^2)/s|$$

The task of definition of a spin of the system of points mass can be reduced to solution of the task of definition of a spin of a revolving ring, the mass $M_s$ of which is uniformly distributed on the diameter $D_s$. In Fig.10 the hydrogen radial polytron is shown, which is on the energy level $m$=4. The couple of force $F$ is acted to points, which are at distance $z=D_s/2$ from the center of polytron.

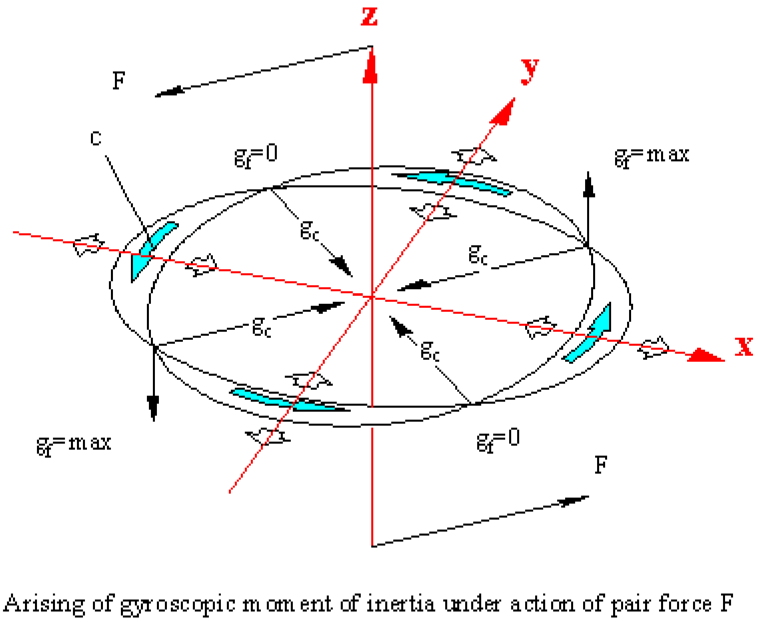


**Fig.10**
**Arising of gyroscopic moment of inertia under action of couple of forces** $F$

At first, let's consider the not vibrant ring, the points mass of which are rotate around of axis $z$ with speed $v$. The task consists in calculating of the force $F$ and the energy, which are necessary for rotational displacement of the ring on the angle of 180 degrees around of the axis $f$, passing through two point, in which acceleration $g_f$=0. The time of gyration should be equal to halfcycle of gyration of the ring around of axis ***z***. In this case those two points of the ring, which in the instant ***t***=0 are under operation of acceleration $g_f$=max, in the instant $t_c=(\pi\cdot D_s)/(2\cdot v)$ will appear on the opposite side of the ring, but thus there will be a rotational displacement of speed of points on 180 degrees. I.e. the speed ***v*** will be damped also kinetic energy of gyration of the ring around of axis ***z*** becomes equal to zero.

We guess, that this mathematical method of damping of speed of rotation will allow receiving authentic physical outcome for calculation of a moment of momentum.

The kinetic energy of gyration of the ring around of axis ***z*** is equal

$$W_z = \frac{M_s \cdot v^2}{2} \quad |J| \qquad (8\text{-}1)$$

The simple calculation reveals, that the angular acceleration under operation of the forces ***2F*** should be equal:

$$\tau_f = \frac{4}{\pi \cdot D_s} \cdot \left(\frac{2 \cdot v^2}{D_s}\right) = \frac{4 \cdot g_c}{\pi \cdot D_s} \quad |1/s^2| \qquad (8\text{-}2)$$

where $g_c=(2\cdot v^2)/D_s$ – centripetal acceleration of the points of the ring.

Angular velocity, which will be gained by the ring in time $t_c$ will be equal

$$\omega_f = \frac{4 \cdot v}{D_s} \quad |1/s| \qquad (8\text{-}3)$$

The moment of inertia of the ring concerning axis ***f*** is equal:

$$J_f = \frac{M_s \cdot D_s^2}{8} \quad |kg\cdot m^2| \qquad (8\text{-}4)$$

The kinetic energy of gyration of the ring around of axis ***f*** in time $t_c$ will reach value

$$W_f = \frac{J_s \cdot \omega_f^2}{2} = M_s \cdot v^2 \quad |J| \qquad (8\text{-}5)$$

The mechanical work of forces ***2F*** at rotational displacement of the ring around of axis ***f*** on the angle ***π*** is equal to the sum of kinetic energies of gyration of the ring around of axis ***z*** and around of axis ***f***

$$\pi \cdot D_s \cdot F = \frac{3}{2} \cdot M_s \cdot v^2$$

Consequently,

$$F = \frac{3}{2} \cdot \beta \cdot v^2 = \frac{3}{4} \cdot \beta \cdot g_c \cdot D_s \quad |N| \qquad (8\text{-}6)$$

where ***β*** – the linear density of mass of the ring.

If after rotational displacement of the ring around of axis ***f*** on the angle ***π*** to remove the operation of the forces ***2F***, the ring will be rotate on inertia (mechanically) with the angular velocity $\omega_f$, but now it will not be rotate around of axis ***z***. Therefore, the force, which was required for overcoming inertia of the ring concerning axis ***f***, is equal 2/3 of the force ***F***.

$$F_f = \frac{1}{2} \cdot \beta \cdot g_c \cdot D_s \quad |N| \qquad (8\text{-}7)$$

The formula (8-7) speaks about that the inert mass of the ring is the function of centripetal acceleration $g_c$, i.e. is gravitational property.

Now we shall pass to solution of the task of an inert mass of polytron, in which the speed ***c*** transfers an oscillation phase of points along the quantoide, but at that time, polytron is not rotating around of axis ***z***.

By analogy with the magnetic and electrical moments, we have selected for the mechanical moment of polytron such structure, in order the product of the mechanical moments of two polytrons was equal to gravitational force of interaction between them.

The formula for calculation of the mechanical moment of polytron concerning a pole O, which is distant in $r$ from center of polytron looks like

$$p_g(r,\theta)=\frac{\varepsilon_g\cdot c\cdot\cos\theta}{r}\quad |N^{1/2}| \qquad (8\text{-}8)$$

where $\theta$ – an angle between radius-vector $r$ and plane of polytron.

$\varepsilon_g$ – gravitational induction of ergoline, which is determined by curvature of speed of light and by density of linear energy in polytron.

For example, for electron $\varepsilon_g = 3.04\cdot10^{-44}$ $|N^{1/2}\cdot s|$.

The force of gravitational interaction between two radial polytrons is equal to product of their mechanical moments

$$F_{gij}=p_g(r,\theta_i)\cdot p_g(r,\theta_j)\quad |N| \qquad (8\text{-}9)$$

In Fig.11 the dependence of density of gravitational energy of radial polytron of angle $\theta$ is shown.

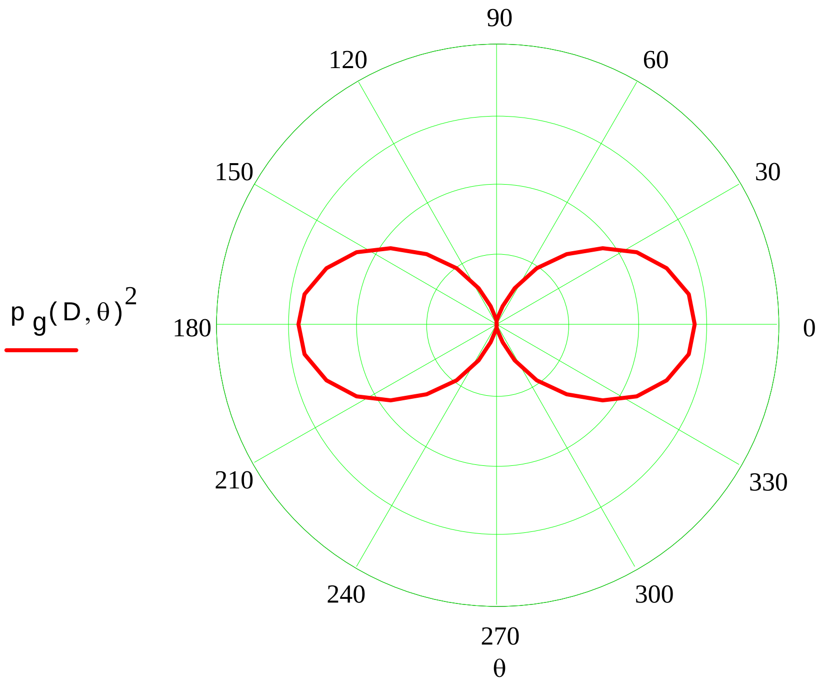


**Fig.11**

**The polar diagram of allocation of volumetric density of gravitational energy of radial polytron**

In the work "New interpretation of a gravitational constant" we have shown, that the gravitational constant is the function of centripetal acceleration $g_c$.

The comparison of two formulas of gravitational interaction – formula (8-8) at $\theta = 0$ and formula (9) from the mentioned paper – allows to express the gravitational electron mass in units of angular acceleration.

$$M_e=\frac{g_c}{\pi\cdot D_s}=\frac{2\cdot c^2}{\pi\cdot D_s^2}=1.463681837\cdot10^{36}\quad |1/s^2| \qquad (8\text{-}10)$$

The formula (8-10) is the first confirmation of our postulate about linear energy – of postulate about ergoline, and reveals link of the mass with the time.

Formula for gravitational electron mass in units of angular acceleration expresses the current state of real world.

The Earth is rotate around own axis and around of the Sun.

The solar system is rotate around of center of our Galaxy.

Our Galaxy is rotate around of center of some other Supergalaxy, etc.

Some of these systems can be rotating with accelerating; others can be rotating with slowing. The total of rotary accelerations influences the value of gravitation and mass in each point of space and time.
Besides, all these systems vibrate – from cosmic objects until atoms and below.
Atoms consist of vibrant energy rings - from polytrons.
The vibration of polytrons creates in space the electrical and magnetic forces, which are indissolubly coupled with each other. Forces of vibration are spread in space with speed of light, interacting with polytrons in atoms and with free polytrons, and create the lively and active medium for everything, what can vibrate.
In dinosaur's times the earth year and the earth day were shorter, therefore now we live in the phase of negative angular acceleration. We guess, that the electronegativity of the Earth is conditioned by her uniformly slowed gyration.
The Earth is the huge gyroscope, which is charged by negative electricity. The gyration of electric charge generates some part of magnetic field of the Earth.
In order to test quantitatively this supposition it is necessary go to the "magnetic" history of the Earth. During the existence the Earth, her magnetic poles had turned over some times. Not so large energy is necessary for turn over of poles of the Earth. In any case, it is significant smaller than it is necessary for rotational displacement of our earth gyroscope on 180 degrees. But if to assume, that at rotation of the solar system around of galactic center, we moving on an elliptic orbit, then the pattern becomes more–less actual.
At moving of celestial body on an elliptic orbit the rotary acceleration of the body changes the sign four times for each turnover. The period of revolution of the solar system around of center of our Galaxy is approximately equal of 240 millions years. Therefore, the period of revolution of the magnetic field of the Earth should be equal of 60 millions years.
The reality of the world, in which we live, is, that we are capable to feel and to meter with the help of instruments only three phenomena of the nature - space, time and force. The majority of other physical units of measurements should not be utilized in theoretical physics, because they bring in tangle to understanding of the existing theories and hamper development of new hypotheses.
The research of physical and mathematical legitimacies of interaction between different objects of the surrounding world is extremely fascinating occupation. But we never should forget about the main duty for the researchers.
This duty consists in the solution of secrets of the living substance.
The equations of the electrical, magnetic and mechanical moments are designed specially to search for the laws of living substance in the mathematical form.