

Yuri Dunaev
Ukraine, Kyiv
(dunaev.levitski@gmail.com)

MAGNETIC FIELDS OF SPHERICAL ASTRONOMIC BODIES

© Yuri Dunaev, 2017

The Summary

Magnetic fields of spherical astronomic bodies depend mainly of their dimensions and angular rotation velocity. One may calculate spherical astronomic bodies' magnetic fields values by formula: $B = B_T \frac{R^3}{T}$, where B_T is magnetic field of the Earth and R and T are the body's radius and period of rotation comparatively to those of the Earth.

Key words

Magnetic fields, Earth's magnetism, dynamo, Solar system planets,

In my paper [1] published in GSJ in 2010 there was expressed the idea that magnetisms of the Earth, Sun, solar system planets, and other astronomic bodies are products of their rotation and for their explication do not need any electric currents.

In my further paper [2] there were proposed examples of solar system planets and their satellites magnetisms originating from their rotation around their proper rotation axes without any participation of electric currents.

Unfortunately modern science continues to persist believing that the cause of astronomic bodies' magnetism is mutual transfer of their deep masses, which creates electric currents inciting magnetic fields (the so called dynamos) [3]. Such beliefs concern magnetisms of the Earth, Sun, and other astronomic bodies.

In my today paper in continuation to the ideas expressed in the earlier ones, I am going to ground them more in detail and to propose an at least approximate calculative formula.

In all my publications I considered gaseous ether as a medium, in which its miniscule particles (elons) are chaotically moving in all directions with their own speeds, the sum of which speeds being zero. Such pattern may resemble calm windless air. But similarly to air in ether can arise themselves its own ethereal winds, which winds modern science associates with magnetic fields. Such winds arise from interactions between ether and physical objects, such interaction being more effective, more quickly the objects are moving relative to ether. Among all physical bodies the quickest ones are electrons (for instance, orbital electrons of hydrogen molecule have speed only 273-fold lesser than the speed of light in vacuum [4]). Consequently magnetic fields arising from interactions of ether and electrons are the

most notable, and consequently modern science explains magnetic fields arising around rotating astronomic objects by allegedly existing in their internal levels electric currents.

According to existing bibliographic data [5] rotation of a spherical body of radius R around its proper axis with angular velocity ω in a liquid of viscosity μ needs applying to the body a torque

$$\tau = 8\pi R^3 \mu \omega \quad (1).$$

One may find the connection between the above formula and the appearance of magnetic fields embracing astronomic bodies rotating in gaseous ether, if one imagines that the bodies' rotation occurs under the action of a torque appearing under the action of the mechanism described in my article [6]. The said rotation occurs against the resistance of the gaseous ether and provokes arising therein elonic currents, which we perceive as magnetic fields. The intensity of these currents has to equal the applied torque, calculated with the formula (1).

If in order to compare with the magnetic field of the Earth, to drop in the formula (1) the presumably equal for all astronomic bodies 8π and μ , there might be possible to calculate magnetic field of any spherical astronomic body by formula

$$B = B_T \frac{R^3}{T} \quad (2),$$

where B_T is magnetic field of the Earth that according to surface measurements [3] is 0,25 - 0,65 gauss (0.25 – 0,65 microteslas), R is radius of the body compared to the same of the Earth, and T is its rotation period divided by the same of the Earth.

In order to obtain the data comparable to that of the Earth one takes $B_T = 1$ and performs calculations according to formula (2) in the here beneath Table, in which the initial data relative to the Solar system planets were obtained from [7] and similar data relative the Sun from [8].

Table

Astro-nomic bodies	Radii (Earth' radii)	Rotation periods (Earth' days)	Magnetic fields according to formula (2)	Magnetic fields (published comparative data)	Ratios between published and calculated data	Ratios between calculated and published data
1	3	4	5	6	7	8
Mercury	0.3829	58.785	0.000955	0.0006	0.6283	1.5917
Venus	0.9499	243.686	0.003517	0.00		
Earth	1	1	1	1.000	1	1
Mars	0.5320	1.02876	0.003419	0.00		
Jupiter	10.973	0.41467	3186.204	19519	6.1275	0.1632
Saturn	9.1402	0.44622	763.602	578	0.7569	1.3211
Uranus	3.9809	0.72030	87.585	47.9	0.5469	1.8285
Neptune	3.8647	0.67309	85.7579	27.027	0.3152	3.173
Pluto	0.1876	6.405	0.001031	0.00		
Sun	109	25.38	51026	9804	0.1921	5.2046

As one can see from the Table, the results obtained by calculations according to formula (2) essentially coincide with official measurement data, which may testify to their veracity. Existing divergences one

may explain by magnetic fields differences in different body's places as well as by measurements inaccuracies.

Conclusions:

- 1) Magnetic fields of spherical astronomic bodies depend mainly of their dimensions and angular rotation velocity.
- 2) One may calculate spherical astronomic bodies' magnetic fields values by formula: $B = B_T \frac{R^3}{T}$, where B_T is magnetic field of the Earth and R and T are the body's radius and period of rotation comparatively to those of the Earth.

Bibliography:

- 1) Yuri Dunaev, NATURE OF MAGNETISM. MAGNETISM ON THE EARTH AND IN COSMOS <http://gsjournal.net/Science-Journals/Research%20Papers/View/1711>) 2010,
- 2) Yuri Dunaev, NEWTONIAN DYNAMICS, MAGNETISM, AND ETHER, part 2 <http://gsjournal.net/Science-Journals/Research%20Papers/View/4103>) 2012,
- 3) https://en.wikipedia.org/wiki/Earth%27s_magnetic_field
- 4) Yuri Dunaev, QUANTUM MECHANICS' FOUNDATION, HOW STRONG IS IT? <http://gsjournal.net/Science-Journals/Research%20Papers/View/1701>, 2009
- 5) <https://physics.stackexchange.com/questions/56796/drag-on-a-spinning-ball-in-fluid> ,
- 6) Yuri Dunaev, ORIGINS OF ROTATION OF CELESTIAL BODIES, ATOMES, MOLECULES, AND SUBATOMIC PARTICLES) <http://gsjournal.net/Science-Journals/Research%20Papers/View/4159>, 2012
- 7) <http://www.astronomynotes.com/tables/tablesb.htm>
- 8) <https://en.wikipedia.org/wiki/Sun>