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Why Solar Cycles? Modeling the Dynamics of Solar Activity

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Abstract- Amazingly, helium nano-droplets and the heliumcontaining sun when active have the same torus-shaped fast spinning nonlinear electromagnetic fields (NEMFs) with the same dynamics. The fact that our Sun changes its magnetic polarity periodically and regularly (known as periodic flipping of the magnetic poles of the Sun) actually means periodic switches of the directions of spinning of the nonlinear electromagnetic field (NEMF) of the Sun. When the Sun spins clockwise like a vortex, it sucks energy in through both magnetic poles at the two ends of the axis of spinning. This speeds the sun's spinning, which bulges the Sun at the equator and increases the turbulent activity there, making the Sun more active. When the Sun spins counterclockwise as an anti-vortex, it loses energy out through its magnetic poles. This shapes it as a lemon, shrinks the equatorial area, and ceases the solar activity. This is the basis of the observed periodic switches of high and low activity of our Sun (and also of helium nano-droplets). The article offers a dynamic model, which explains the periodic changes of high and low solar activity.

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Why Solar Cycles? Modeling the Dynamics of Solar Activity

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I. Introduction

Let us introduce some concepts of nonlinear physics, which we would need. The flux of running river-water would be linear, if the bottom of the river is smooth. However, if there is a big stone on the bottom of the river, the water needs to flow around the stone and the water flux becomes nonlinear. Behind the stones, turbulence would be observed manifested with a couple of: vortex spinning clockwise and anti-vortex spinning counterclockwise.

Following the law of the folded fingers of the right hand in physics, when the folded fingers show the direction of the currents (or the direction of spinning), the vertical thumb show the direction of the induced magnetic field. Following this law, the vortices (which spin clockwise) would induce magnetic field toward the surface. This would make the vortices to suck energy in. Following the same law, the anti-vortices (which spin counterclockwise) would induce magnetic field off the surface, which would make the anti-vortices to emit energy.

II. The Dynamics of Fast Spinning Liquid Helium Nano-Droplets

In the November's journal of Physics Today, 2014, p. 16, Ashley Smart wrote the article *Quantized Vortices in a Nanodroplet*,[1] in which she describes the unusual behavior observed in super-fluid fast-spinning helium nanodroplets at temperatures close to the absolute zero.

The cited by her authors[2] observed switching of the nanodroplets between two stages. First, stage a) in which a lattice of Bragg's peaks of neutron scattering were observed seen on Fig. 1 panel a) as dots. At this stage, the droplet had the shape of a torus spinning around axis passing through the hole of the torus. The spinning made the torus bulged at the equator and had an ordered array of quantized alternating vortices and anti-vortices in its equatorial area from which the neutron scattering originated.

However, at stage b) Bragg's peaks of neutron scattering were not observed, which means there were no vortices and anti-vortices any more. Not only this, the X-ray diffraction on Fig. 1 panel b) showed more widely spaced diffraction lines along the axis of spinning of the donut. This means that the droplet now emits energy through both ends of the axis of spinning.

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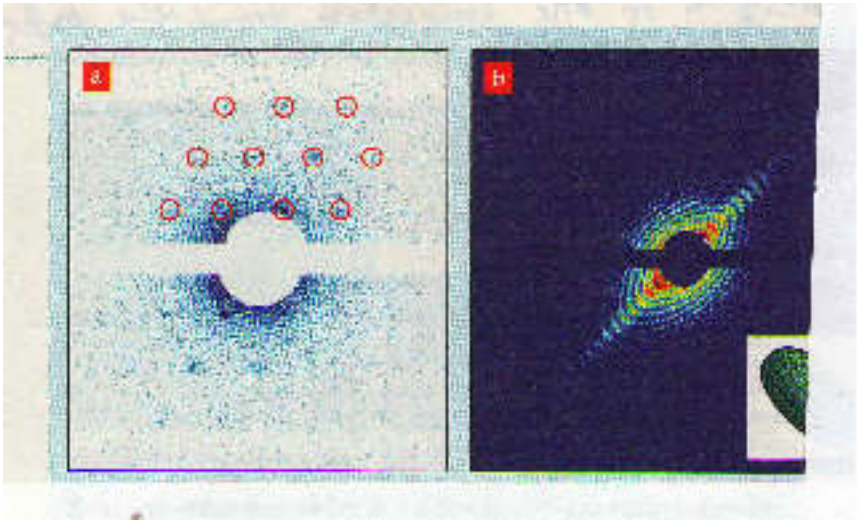

*Fig. 1**

Panel a: Brag's neutron scattering from a donut-shaped helium droplet bulged at the equator with quantized alternating vortices and anti-vortices in the equatorial area. Panel b: At later time the same droplet shows no Bragg's scattering, which means vortices and anti-vortices are not present; X-ray diffraction shows shrunk equatorial area and elongation along the poles with emission from the poles.[1,2]

The X-ray diffraction also shows more narrowly spaced diffraction lines at the equator of the donut, which means that the emitted energy through the poles shrunk the droplet at the equator and eliminated its turbulence. The X-ray diffraction shows that the nanodroplet in stage b) has the shape of an elongated lemon, which emits energy from both ends of the axis of spinning (magnetic poles).

However, the authors of the article on helium nanodroplets[2] still wanted to see the droplets in stage b) shaped as a donut flattened at the poles and bulged at the equator. But the fact that Bragg's neutron scattering was not observed means that vortices and anti-vortices were not present, which should tell them that something dramatic had happened. Indeed, the X-ray diffraction on panel b) shows that the droplet has emitted energy through the poles, and its turbulence (vortices and anti-vortices) has disappeared.

At the end of her article, when Ashley Smart tries to explain the lack of neutron-scattering peaks for the droplet on panel b) (which means lack of vortices and anti-vortices), she cites the authors' opinion that this could be a sign of new physics.[2] Yes, this new physics is already developed - it is nonlinear physics – the physics of dynamic systems.

III. Nanodroplets, Stars, and Humans Have the Same Torus (Donut) Shape NEMFs

Amazingly, just as the helium nanodroplets, the helium containing stars exhibit similar dynamics of sucking or emitting energy through both ends of the axis of spinning of their donut shaped NEMF. In double stars, it was observed how the dimmer star was sucking energy from the brighter star through the hole of its donut-shaped NEMF, while the brighter star was loosing energy also through the hole of its donut. This was continuing until the energies of both stars became equal.[3,4,5]

Recently, Sarafina Nance of the University of Texas at Austin claimed in an article published in *Monthly Notices of the Royal Astronomical Society* that the rapid spinning of the famous star Betelgeuse was probably a result of swallowing another star.[3] Since in double stars the old dimmer star sucks energy from the younger brighter star through its donut hole the swallowed star was probably sucked through the hole of the donut shaped NEMF of Betelgeuse.[4,5]

Periodic emission of energy from the magnetic poles of a neutron star was first observed in 1967 and later these neutron stars were called pulsars. Presently, there are about 2,000 known radio-pulsars emitting radio waves from their magnetic poles. The X-ray pulsars, which emit X-rays from their magnetic poles, are called magnetars because of their extremely strong magnetic fields $10^{14} – 10^{15}$ G.[6]

First, scientists thought that the emission is powered by the energy of the pulsars' spinning, but recent theories based on computer simulations claim that magnetars' emissions are powered by gradients and instabilities of the star's magnetic field.[1] However, we should not forget that the spinning of NEMF cranks the magnetic field.

Also, observations of the solar dynamic observatory (SDO) revealed that magnetic fields rule the solar activity, which agree with the computer simulations of magnetars revealing that magnetic gradients and instabilities of the star's magnetic field rule the magnetars' periodic emission from their magnetic poles. However, we should never forget that the spinning of NEMF cranks the magnetic field.

Measurements with our patented high-sensitivity energy meter of the electric component of the human spinning donut-shaped NEMF (Fig. 2* - 5*) showed that Reiki healers, just like the stars, suck energy through the top of their head, where the hole of their donut shaped NEMF is (Fig. 6*).[7] Russian measurements of the spinning of the human NEMF with their patented 'torsemeter' showed that happy (positive) emotions (or just positive thinking) make the donut shaped NEMF spin faster clockwise[7] and according to nonlinear physics and our measurements suck more energy.[8]

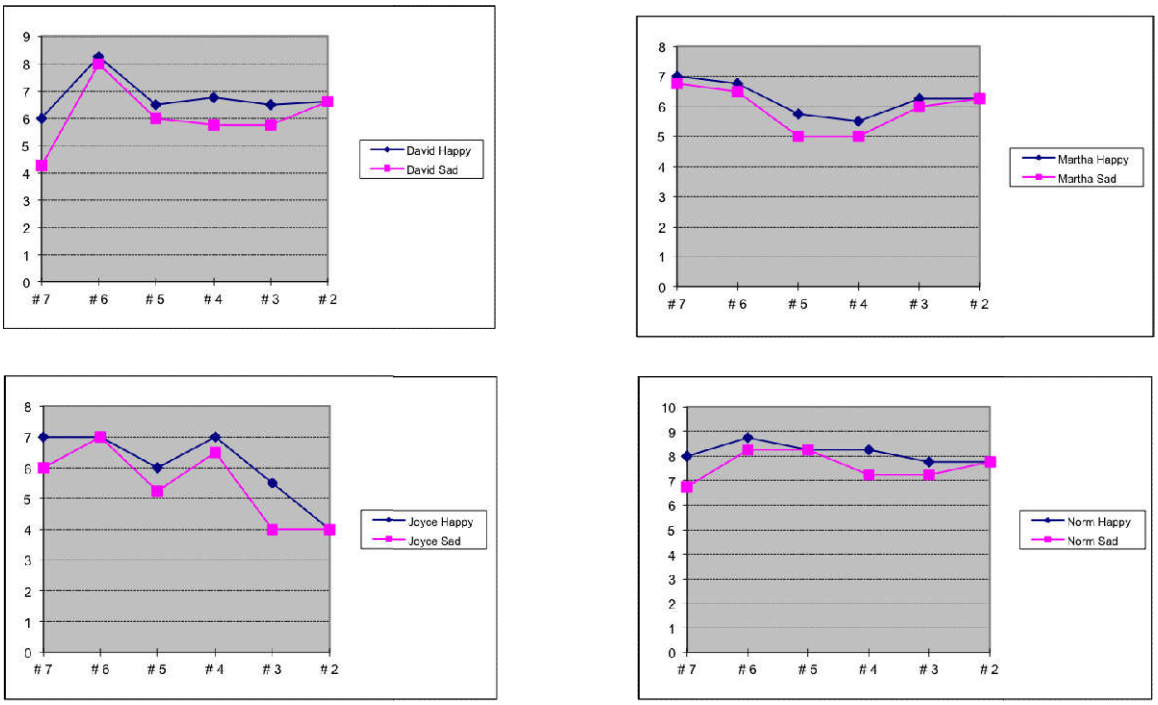

Fig. 2 - 5**

Our electrical measurements at the points with alternating spinning #2 to #7 on Fig. 6* of the human torus-shaped NEMF at positive thinking (blue curves) and negative thinking (pink curves).

The Figs. explain the energy uplift we feel at positive thinking. Our electrical measurements at the points #2 to #7 on Fig. 6* of the human NEMF showed that at positive thinking the whole NEMF spins clockwise (Russian measurements) and electric energy is sucked from the atmosphere through the top of the head (point 7 in our measurements).[8] (This is even more visible in measurements of Reiki Healers).[9] The sucked energy increases the energy of the whole body and makes it more balanced. For this reason, positive thinking makes us healthier.

Opposite to this, at negative thinking, the whole NEMF spins counterclockwise and looses energy, which explains why negative thinking make us feel miserable. Not only is the energy of the whole body lower, it is more unbalanced, which means negative thinking lead to a disease. Since the energy of the genetically inherited weak organ drops in energy maximum, negative thinking leads to a disease of genetically inherited weak organ.

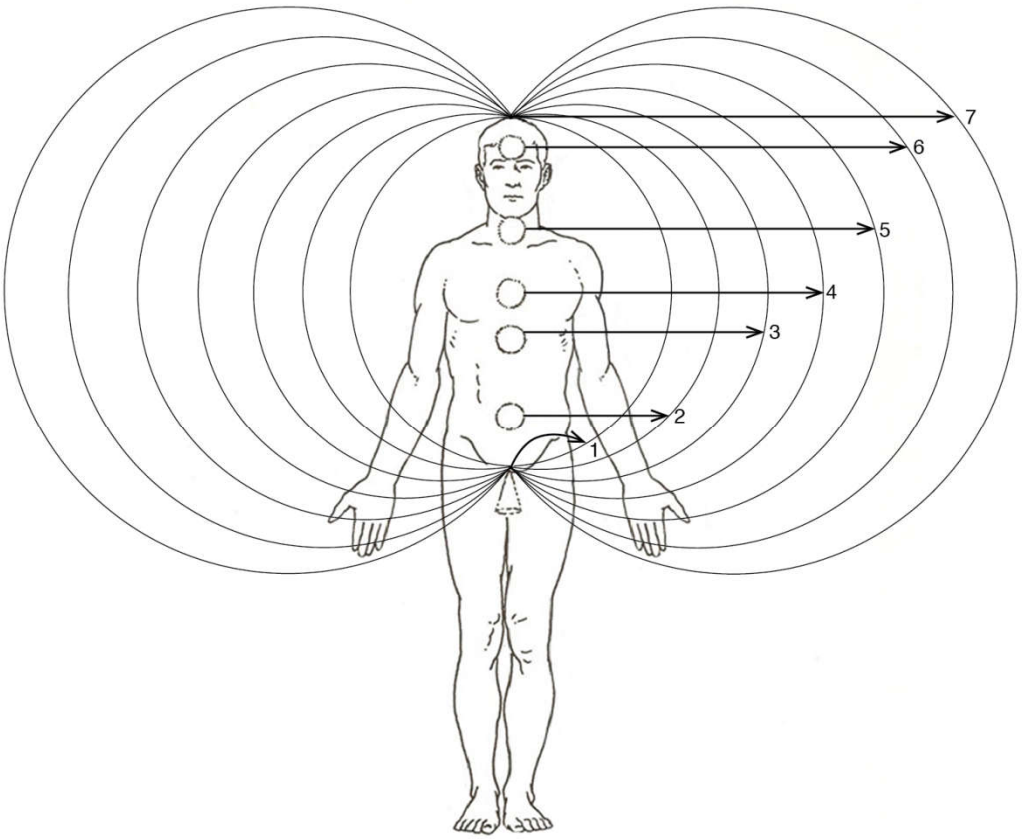

*Fig. 6**

Pictured is the vertical cross-section of male's torus-shaped NEMF with alternating vortices and anti-vortices along the backbone and its discrete (quantum) energy levels. Let us compare the male torus-shaped NEMF with the torus-shaped NEMF of the Sun. The androgynous solar NEMF has two chains of alternating vortices and anti-vortices running along the equator and spinning in the opposite directions in the northern and southern hemispheres. Each of the genders has only one chain of alternating vortices and anti-vortices, which are along the axis of spinning of their NEMF, and they spin in opposite directions in males and females.

It seems that the androgynous NEMF of the Sun has been split through the equator to get gender specific male and female NEMF. From the northern hemisphere of the Solar NEMF, the female NEMF was created. From the southern hemisphere the male NEMF was created. Since the NEMF is self-organized field, it reshaped after the split into two torus-shaped NEMFs, but now each gender has only one chain of alternating vortices and anti-vortices, which is along the axis of spinning of the male and female NEMF, and they spin in opposite directions in males and females.

IV. As Above, So Below

Our Sun and the rest of the stars, which are mostly helium and spinning, seem to exhibit behavior similar to the helium nano-droplets. During solar activity, the observed numerous solar spots in the equatorial area are the openings of two chains of alternating vortices and anti-vortices running along the equator. The activity in the equatorial area results from fast spinning of the Sun in clockwise direction like a vortex, at which energy is sucked in.

Similar is the active state of the nano-droplets when they have a system of quantized vortices and anti-vortices (in the equatorial area) observed with Bragg's neutron scattering (Fig. 1*, panel a). During its active period, the nano-droplets spin fast clockwise like a vortex, suck energy in, are bulged at the equator, and exhibit turbulence in the equatorial area manifested as vortices and anti-vortices, which are seen as peaks with Bragg's neutron scattering.

Similar to the state of low solar activity when solar spots are not observed on the surface of the sun, the nano-droplets have a state when Bragg's neutron scattering was not observed because vortices and anti-vortices were not present (Fig. 1*, panel b). X-ray

diffraction from nano-droplets (Fig. 1*, panel b) shows emission of energy through both ends of the axis of spinning of NEMF, which leads to shrinking of the equatorial area and disappearing of its turbulent activity.

All this means that: 1/ our sun breathes energy in and out and this sustains its life just like we breathe air in and out to sustain our life. 2/ This also means that the solar energy comes from outside the sun, not from its core, as we presently chose to believe.[10]

Also, the whole material world (including the electron itself) is a material body and torus-shaped NEMF.[11] It is known that the electron emits virtual photons and sucks them back in. If so, we can expect this to happen during the cycle of electron's activity when it sucks energy in, spin faster clockwise, and exhibit turbulence. However, this cycle of high activity is expected to alternate with a cycle of low activity when the electron spins counterclockwise, looses energy through both ends of the axis of spinning, which makes it elongated in this direction, and has shrunk equatorial area without turbulent activity.

In other words, we can expect the magnetic dipole moment of the electron, induced by the electrons spinning, to alternatively shrink and expand. This is exactly the conclusion, which Dr. Andrew Steiner reached.[12] He is a neutron-star specialist and to explain the observed behavior of neutron stars, he needed to assume that their dipole moment alternatively shrink and expand. In our understanding, this means that the spinning of the neutron stars alternatively switches between clockwise (when the neutron star is shrinking) and counterclockwise (when the neutron star is expanding).

So it is - as above, so below. Unfortunately, being specialized only in neutron stars and not knowing nonlinear physics (I spoke with him), he could not see that this is a global feature of all self-organized systems with torus-shaped NEMF.

V. Dynamic Model Explains the Dynamic of Solar Activity

When creating a dynamic model, let us first consider the fact that the solar wind looks like a four-leaf clove.[10] The first satellites detecting solar wind (a fast running flux of electrically charged particles) found that as the Sun spins once around its axis for 27-28 days, the solar wind that strikes the earth reverses its polarity 4 times. In the boundary between two 'leaves' of the solar wind, called sectors, there is a brief lull for two days.[10] This gives us the right to assume that the electromagnetic field of the Sun should be simulated with pyramids, as if the leaves of the four-leaf clover of the solar wind have originated from the edges of a pyramid.

The dynamic of stars explained in section 3 gives us the right to assume that the torus-shaped field of the Sun results from the dynamic interaction of two intersecting pyramids – one with top up, which simulates vortex, and the other with top down, which simulates anti-vortex.[11] Both pyramids are inscribed in a sphere (Fig. 7*).

Since the activity of the sun is maximal in the equatorial area, which is 30^0 north and south of the equator, we must assume that the pyramid with top down intersects the pyramid with top up at a distance 30^0 from the equator. Then the area secluded between the sphere and the zone of intersection of the two pyramids approximates roughly the shape of a torus, which is the shape of the electromagnetic field of the Sun (Fig. 7*).

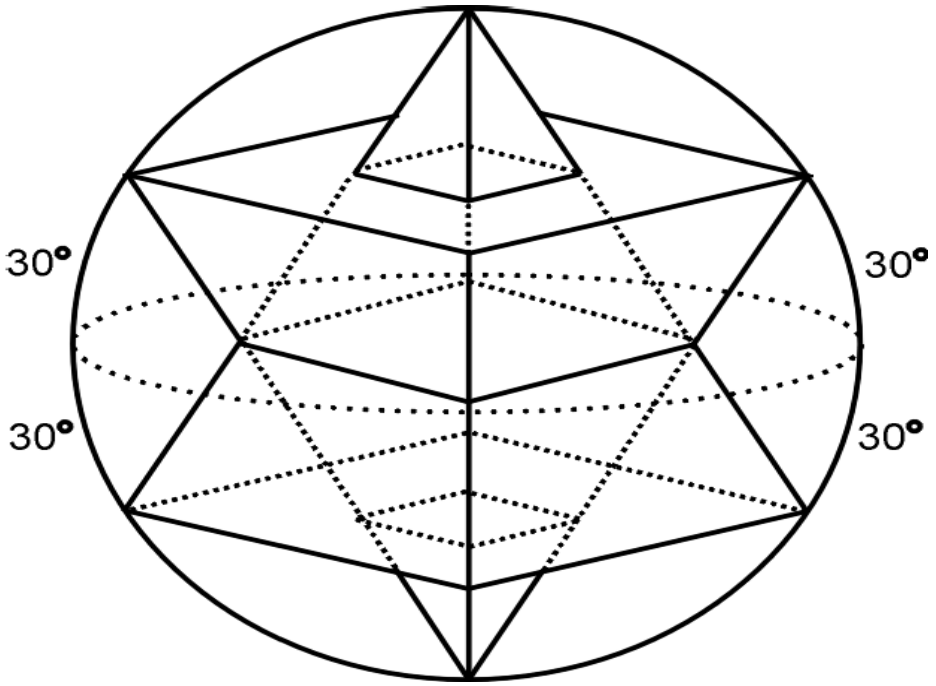

*Fig. 7**

This geometric figure explains the origin of the torus-shaped electromagnetic field of the Sun and the origin of its dynamic.

To explain the periodic changes in solar activity, we must assume that the two pyramids are in dynamic equilibrium. But what could trigger this dynamic? Since the field of the sun is electromagnetic, electric or magnetic external influences could trigger its dynamic. Recent studies of the Sun found that its activity relates to magnetic changes. What could influence the sun magnetically?

All planets orbiting the sun have magnetic moments except Mars, which is an old and cold planet without liquid core and magnetic field (or magnetic moment). Then at symmetric alignments of the planets on both sides of the Sun when the magnetic moments of the planets sum up, we can expect strong symmetric magnetic influence on the sun, which can change the solar dynamic.

When the planets orbiting the sun are aligned on both sides of the sun (inferior conjunction), the strong symmetric magnetic influence of the planetary magnetic moments on the electromagnetic field of the Sun would make the Sun spin faster clockwise. Now the two holes of the donut-shaped field are two clockwise spinning vortices, which suck energy in. The influx of energy and the increased spinning would bulge more the Sun at the equatorial zone of 30^0 up and down the equator. This would increase the turbulent activity at the equator of the Sun, which will be observed as increased number of solar spots or increased solar activity.

In our two-pyramid model, at inferior conjunction (alignment) of the planets at both sides of the Sun, the symmetrical magnetic perturbation (from the sum-up magnetic moments of the planets) makes the two pyramids to go deep into each other, at which the solar equator bulges and the activity of the Sun increases. The last inferior conjunction took place in the year 2005. It was a great planetary alignment including the big planets Jupiter and Saturn. Jupiter, Saturn, and five distant planets were aligned on one side of the Sun, while the Earth and Moon were on the other side.

This made the two pyramids go deep into each other, which increased the solar activity and the temperature on the planets orbiting the sun. On the Earth we called it global warming. Thus, the global warming started in 2005 caused by inferior conjunction of planets and in this article we are going to tell you when it will end – it will end at superior conjunction of the planets. (Fig. 8* presents all the warming (the temperature maximums) in the last 10,000 years).[13]

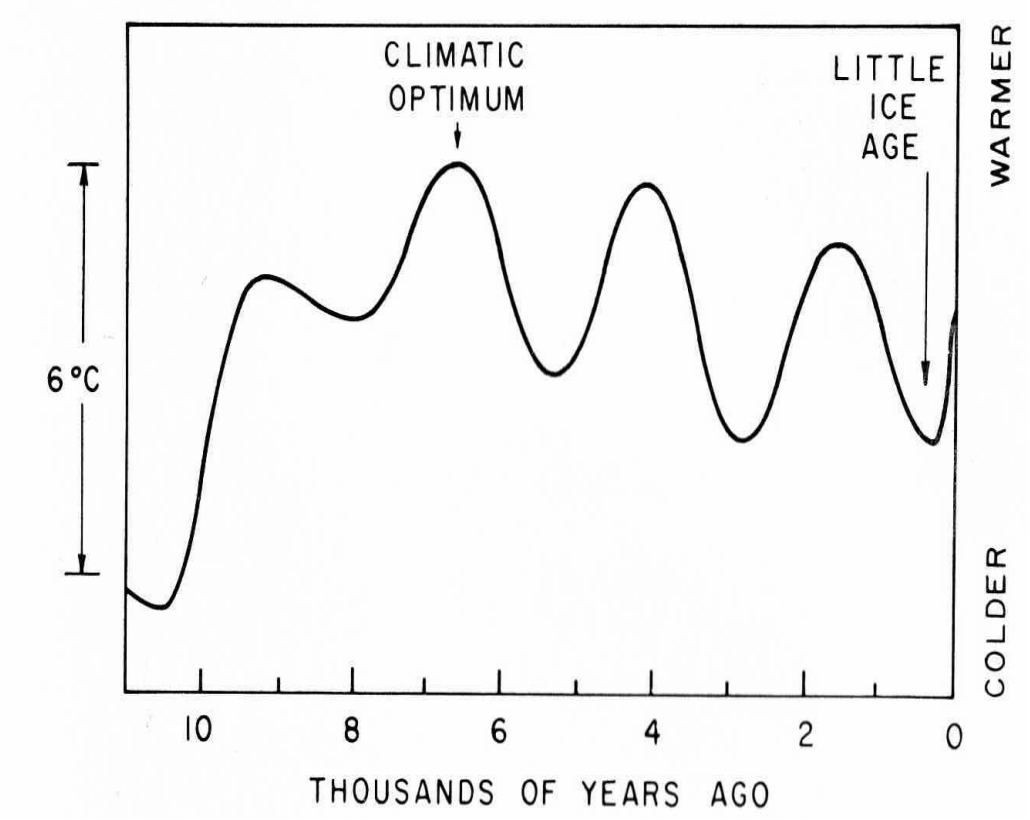

*Fig. 8**

Temperature changes on Earth in the last 11,000 years taken from study of the glaciers[13].

When all seven planets orbiting the sun are aligned at one side of the Sun (superior conjunction) and their magnetic moments sum up, the asymmetric magnetic influence of the planets on the electromagnetic field of the Sun would flip the magnetic poles. This means that the Sun would start spinning in opposite (counterclockwise) direction and emitting energy from its magnetic poles, which would elongate the sun toward the poles. In our model, this would correspond to distancing of the two pyramids.

The distancing of the two pyramids will be observed as pole-to-pole elongation of the Sun and energy emission through both magnetic poles at the two ends of the axis of spinning. This energy emission will end the increased solar activity, the turbulence at the equator will seize, and a period of very low solar activity will start. The periods of low or no solar activity will bring periods of low temperature (Ice Ages) on the planets orbiting the Sun (Fig.8*). [13]

Such superior conjunction is expected to take place in 2020 (astronomical prediction of NASA). Also, the NASA's Solar Dynamic Observatory (SDO) launched in orbit in 2010 to measure the shape of the Sun during one full cycle of solar activity (2010 – 2022) would have the opportunity to record the changes in the shape of our sun caused by this superior conjunction, which will elongate the Sun toward its poles and seize the solar activity.

Thus, the global warming will end in 2020 and our temperatures will start gradually dropping down and moving us to the next Mini Ice Age. Fig. 8* from study of the glaciers[11] shows that in the last 10,000 years the Earth had been through one Big Ice Age represented by the first deep temperature minimum and four Mini Ice Ages represented by four shallower minimums. The periodicity of Ice Ages is 2,562.5 years.[13]

We can also determine the time when the global warming will end from Fig. 8*. Let us extrapolate the curve[11] of the last global warming and determine the time when the global warming, would end. We are getting for the end of the global warming the same year 2020, which was the year when all seven planets will align on one side of the Sun. When the global warming ends, the temperatures will start gradually rolling down shifting us to the next Mini Ice Age.

As said, the magnetic disturbance from the summed-up magnetic moments of all planets aligned at one side of the sun would flip up the magnetic poles of the Sun. As a result, the Sun would start spinning in opposite direction, become elongated toward the poles, emit some energy through them, and its activity would drop down to almost zero. The earth will start cooling drifting to the next Mini Ice Age.

The zigzag temperature curve on Fig. 8* means that at every temperature maximum (global warming),

the Sun is active because it spins clockwise, sucks energy through both magnetic poles, bulges at the equator, and exhibits turbulence manifested with a set of vortices and anti-vortices, whose openings are observed as solar spots. At every temperature minimum (Ice Age), the solar activity is very low (close to zero) because the Sun spins counterclockwise, emits energy through both poles, and is pole-to-pole elongated.

We truly believe that NASA's Solar Dynamic Observatory (SDO)[14] will confirm our predictions that during warming periods (global warming) the solar activity is high because our Sun spins fast clockwise and sucks energy in through both magnetic poles. The fast spinning makes it bulged at the equator and increases its turbulence. During the cold periods (Ice Ages), the solar activity is low or zero because our Sun spins counterclockwise and emits energy through both magnetic poles, which makes it elongated toward the poles.

VI. Conclusions

In this article, we showed that at great planetary alignments (which include the big planets Jupiter and Saturn), when five distant planets are aligned on one side of the Sun and the Earth and Moon are on the other side, the summed-up magnetic moments of the planets perturbs the Sun symmetrically on both sides. In our two-pyramid model, the two pyramids go deeper into each other, the Sun spins faster, bulges at the equator, its turbulence increases, i.e. the solar activity increases, and this leads to global warming on the planets orbiting the Sun. Such inferior conjunction of the planets took place in the year 2005 and this is what started the global warming, which we experience now.

At great alignment, when all seven planets including the Moon are aligned on one side of the Sun in superior conjunction (year 2020 during solstice), the strong asymmetric perturbation could be expected to flip the magnetic poles of the Sun and the two pyramids would distance each other. This would elongate the shape of the Sun toward the poles, some energy would be emitted through them, and the solar activity would drop down to almost zero. Thus, the global warming we experience now will end on December 21, 2020 when all the planets orbiting the Sun will align on one side of the Sun (NASA prediction). The temperatures will start gradually dropping shifting us to the next Mini Ice Age (this will be the subject of another article offering a mathematical model of it).

Only a scenario like this could explain the zigzag periodic temperature changes observed on Earth through study of the glaciers (Fig. 8*).[13] Fig. 8* can also be used to predict through extrapolation the year in which the global warming will end and we will start gradually shifting from global worming to cooling, which will lead us to the next Mini Ice Age. The result of this extrapolation is - the year 2020 will be the year of the dramatic change from warming to cooling.

We are certain that the NASA's Solar Dynamic Observatory (SDO), launched in space in 2010 to measure the shape of the Sun during one full cycle of solar activity[14], will confirm the predicted here bulging at the solar equator during solar activity and pole-to-pole elongation during the period of low or no solar activity. This was already confirmed in the experiments with super-fluid fast-spinning Helium nanodroplets.[2] Another article will present a mathematical model describing the solar dynamics.

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