

# Solar energy and dynamic

## Abstract

We currently believe that the energy of our Sun comes from nuclear reactions in its core. However, measurements show that the temperature of the solar corona is millions of degrees Kelvin hotter than the sun's visible surface. Also, prominences bringing solar matter from deeper areas are much cooler. These data demand revision of our perception about the energy source of our sun. If the solar corona is hotter and the solar core cooler, obviously the sun burns what is outside of it. The postulated by Einstein space-vacuum is curved by the gravitation of the Sun, but vacuum=nothing cannot curve! The detected in 2017 waves from two merging Black Holes 1.3 billion light years away (LIGO project) require substance in which these waves could propagate. We offer here a model of solar dynamic, in which when the sun spins clockwise, it sucks energy from outside and becomes active and when the sun spins counterclockwise, it releases energy and becomes low active. This explains the alternative switches of high and low activity of the sun, known as periodic switches of the magnetic poles of the sun, which are basis of the alternating warm periods and Ice Ages on earth.

**Keywords:** the Sun's energy source, hot sun's corona, cool sun's core, model of solar dynamic, explaining the solar activity cycle

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## Introduction

Let us introduce some concepts of nonlinear physics, which we would need. If the bottom of a river has stones, the flux of running water would be nonlinear because it needs to flow around the stones. 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 current, the thumb shows 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. Ilya Prigogine, who took Nobel Prize for his nonlinear theory describing the dynamic of self-organized systems, writes in his book *Time, Chaos, and Quant*<sup>1</sup> that the final state of development of a dynamic system is called attractor. There are four different types of attractors: point attractor (in the one dimensional case), cyclic attractor (in the two-dimensional space), torus attractor (in the three-dimensional case), and strange attractor. They are all self-organized systems and self-organized systems are very sensitive to initial conditions. These attractors are the final states of development of dynamic systems, which evolved in perfect order out of the chaos. In this article, the torus attractor will be at the center of our attention.

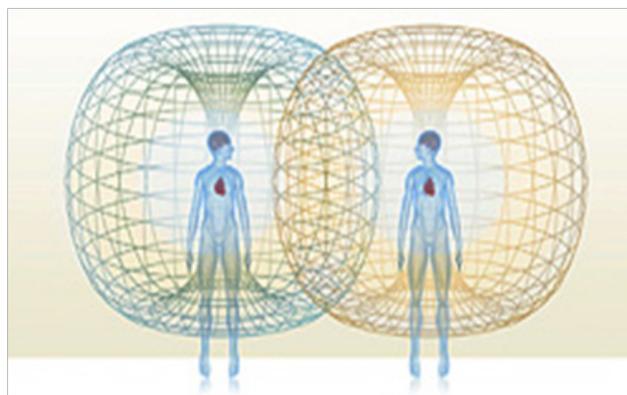
## False beliefs that need to change

We currently believe that the energy of the sun comes from nuclear reactions in its core. However, measurements show that the temperature of the solar corona is millions of degrees Kelvin hotter than the sun's visible surface.<sup>1</sup> Also, the prominences that bring solar matter from deeper areas are 10,000 degrees K cooler than the surface of the sun.<sup>1</sup> These data demand revision of our perception

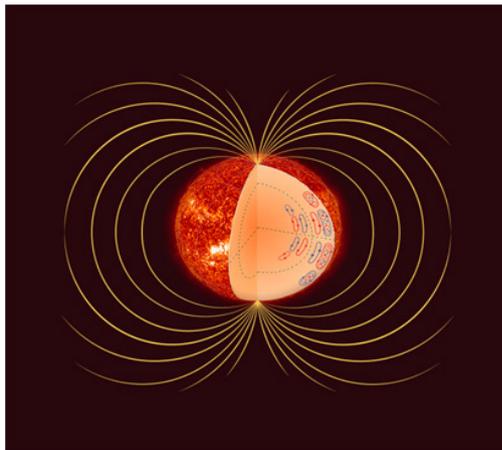
about the energy source of our sun. If the solar corona is hotter and the solar core cooler, obviously the sun burns what is outside of it. Also, I am seriously bothered by the facts that the postulated by Einstein space-vacuum is curved by the strong gravitation of the sun and vacuum=nothing cannot curve! Also, LIGO detected gravitational waves from two merging Black Holes 1.3 billion light years away from us.<sup>2</sup> This means that there should be a substance, in which these waves could propagate.

## Nonlinear model of solar dynamic explains the alternating high and low activities of the sun

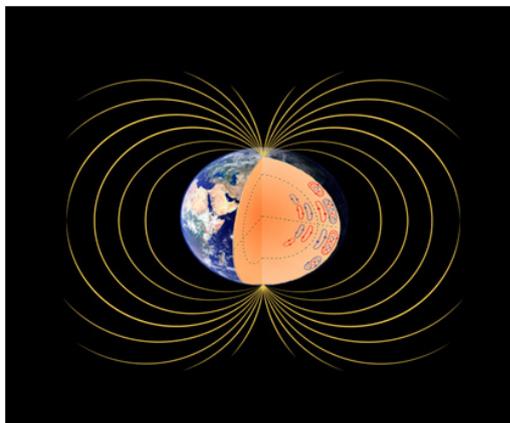
Not only do the electromagnetic fields (EMFs) of humans (Figure 1), Sun (Figure 2), and Earth (Figure 3) have the same torus shape, the EMF of helium nano-droplets<sup>3,4</sup> have the same shape (Figure 5). Even the EMF of elementary particles seems to have the same donut shape and the same dynamic. The elementary particles emit from their equatorial area virtual photons and swallow them back, just like our Sun emits spinning energy balls from its anti-vortices, which after a loop trajectory are swallowed back by adjacent vortices.<sup>5</sup>



**Figure 1** Human nonlinear EMFs have the shape of a torus.

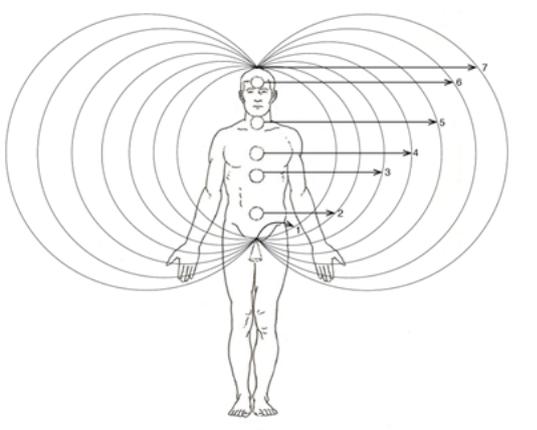


**Figure 2** The sun's nonlinear EMF has the shape of a torus (vertical cross-section).



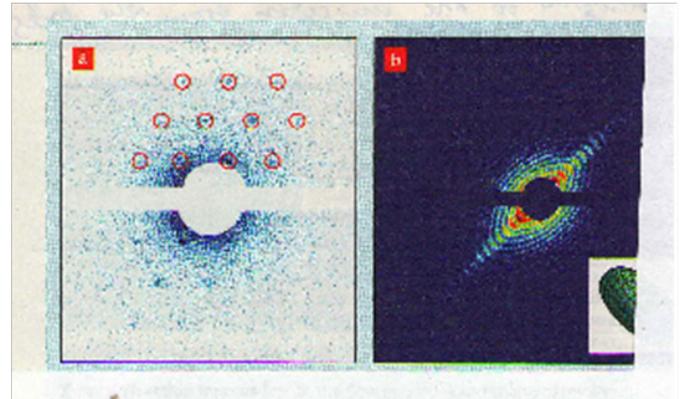
**Figure 3** The earth's nonlinear EMF has the shape of a torus (vertical cross-section).

Not only are the energy levels of the elementary particles, atoms, and molecules discrete or quantized, looking at the radiation belts of our Earth we see discrete levels and looking at our Sun we see discrete orbits. Even the rings of Saturn are discrete. The same is the situation with the human torus-shaped EMF – our energy levels are discrete (Figure 4).<sup>5</sup> All torus-shaped EMF, which exhibit turbulence, seem to have discrete (quantum) energy levels.



**Figure 4** The basic 7 discrete energy levels of the human nonlinear torus-shaped electromagnetic field (EMF) (vertical cross-section).

The dynamic of helium nano-droplets<sup>3,4</sup> was found to be alternating shifts between two states with two different shapes: i) In the first state, the nano-droplets have the shape of a torus spinning around axis passing through the hole of the torus. Following the rule of the folded fingers of the right hand, the clockwise spinning torus would suck energy in and the more energy is sucked, the faster the torus spins. This bulges the torus at the equator and causes turbulence in its equatorial area manifested with a chain of vortices and anti-vortices seen on plates of Bragg's neutron scattering (Figure 5, panel a).



**Figure 5 Panel a:** Bragg's lattice from a helium droplet bulged at the equator with quantized vortices in the equatorial area.

**Panel b:** A droplet with no Bragg's scattering, which means turbulence is no longer present with X-ray diffraction showing a shrunk equatorial area and elongation along the poles emitting energy.

The second state is a state of low or no equatorial activity. At this state, Bragg's neutron scattering is not observed because obviously turbulence is not present. X-rays diffraction revealed that the nano-droplets are shrunk at the equator and elongated along the axis of spinning of the donut, which seem to emit energy (Figure 5, panel b). As said, the torus is spinning around an axis passing through the hole of the torus and the two ends of the axis of spinning are the magnetic poles of the induced by the spinning magnetic field.

Following the rule of the folded fingers of the right hand, if energy is emitted from both magnetic poles, the torus must be spinning counterclockwise to emit energy. This means that the torus switches periodically between two states:

1. The state of spinning clockwise, sucking energy in, becoming bulged at the equator, and exhibiting turbulence (Figure 5, panel a).
2. The state of spinning counterclockwise and emitting energy out, at which turbulence is not observed (Figure 5, panel b). What caused the shift to the second state? It seems that as the helium droplet was sucking energy through the hole of the torus (or through the magnetic poles of the induced by the spinning magnetic field), it was spinning faster and faster. As a result, the bulging at the equator reached the critical pressure, which the helium substance of the droplets can tolerate.

Then the two magnetic poles at the end of the axis of spinning of the donut distanced each other. Energy was emitted through the magnetic poles (seen on the X-ray diffraction photo of Figure 5, panel b), the equatorial area shrank and the turbulent activity seized. For this reason, Bragg's neutron scattering was not observed in this low activity state. Nonlinear physics needs to step in to finish the picture

of the dynamic. During the active cycle (Figure 5, panel a), the helium nano-droplets suck energy in through their magnetic poles, spin faster and faster, bulge at the equator, and exhibit turbulence. For this to happen, the donut needs to spin clockwise like a vortex, and then the poles at both ends of the donut hole would be vortices sucking energy in (see the Introduction), which will bulge the torus at the equator. (This can happen only if the helium droplets are vortex on top of anti-vortex – see details ).<sup>6</sup>

When the bulging at the equator reaches the critical value of pressure, which the helium substance can tolerate, to release the pressure the spinning switches from clockwise to counterclockwise and then the magnetic poles would be anti-vortices emitting energy. Both magnetic poles would be emitting energy, as the X-rays diffraction revealed, which would shrink the droplets at the equator and end the turbulent activity there. When the shrinking at the equator reaches the critical value of pressure, which the helium substance can tolerate, to release the pressure the spinning switches from counterclockwise to clockwise, the magnetic poles become vortices sucking energy in, and the shape of the droplets become bulged torus again. The sucked energy increases the speed of spinning, which increases the bulging and the turbulence in the equatorial area. And the switches between the two shapes go on and on.

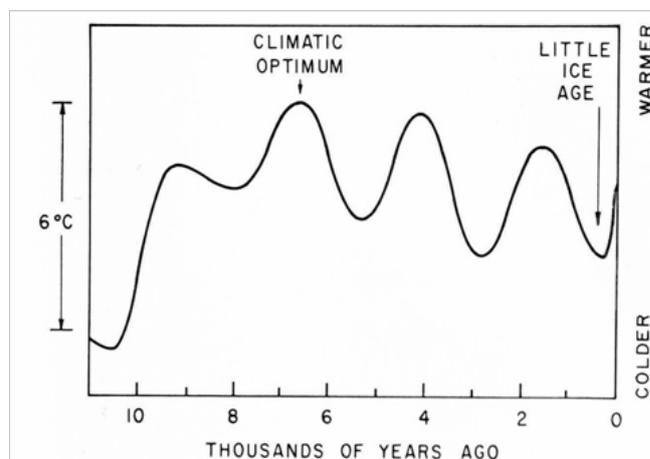
The authors of the article on helium nanodroplets<sup>4</sup> based on the observed Bragg's neutron scattering determined that the droplets were torus shaped (Figure 5, panel a). However, regardless that the X-ray diffraction showed that when Bragg's neutron scattering was not observed (Figure 5, panel b), the droplets were shrunk at the equator and elongated at the poles, the authors still expected the droplets to be a bulged torus. The dynamic alternative shift between two states seems to be typical for all torus-shaped electromagnetic fields including our sun. The solar dynamics is alternative switches between:

- i) High solar activity (Warm Periods on earth) when the sun spins clockwise and sucks energy in, and
- ii) Low solar activity (Ice Ages on earth) when the sun spins counterclockwise and emits energy out.

We know that the sun spins, just as our earth spins. However, we need to be always aware that the sun spins clockwise during the periods of high solar activity (the warm periods on earth), but spins counterclockwise during the periods of low solar activity (the Ice Ages on earth). This is so because according to nonlinear physics when the sun spins clockwise at the end of its axis of spinning there are two vortices sucking energy in. This increases the speed of spinning, which increases the bulging and the turbulence in the equatorial area. This turbulence is observed as solar spots, which are the openings of vortices sucking energy in and anti-vortices are throwing energy out.

Thus, according to nonlinear physics, during the periods of high solar activity the sun must spin clockwise so that the vortices on both ends of the axis of spinning could suck energy in from its environment. We came to the same conclusion as in section 2 – the source of solar energy is outside the sun; it is not in the core of the sun, as we presently believe because there is no evidence supporting this belief. According to nonlinear physics, the sun must start spinning counterclockwise to release the accumulated surplus of solar energy to the environment. This is because only at counterclockwise spinning at the end of the axis of spinning there will be two anti-vortices emitting solar energy. This energy release would lead to a period of very low or no solar activity.

In astronomy and astrophysics, we speak about periodic flipping of the magnetic poles of the sun,<sup>6</sup> but we must always keep in mind that only spinning of the sun in opposite directions creates opposite magnetic polarity. The clockwise spinning of the sun during the period of high solar activity create one magnetic polarity, but the opposite (counterclockwise) spinning during the period of low solar activity creates opposite magnetic polarity. In this article, we explain for the first time why the magnetic polarity of the sun changes periodically and what does that mean. We did this using the terminology and wisdom of nonlinear physics. According to study of the glaciers<sup>7</sup> (Figure 6), we are now living on earth in a period of warming, which is a result of increased solar activity. What initiated the period of increased solar activity would be subject of another article.



**Figure 6** The graphic reflects the Ice Ages on earth in the last 10,000 years. It starts with the big ice age (the deepest temperature minimum) followed by 4 mini ice ages.<sup>7</sup>

## Conclusion

Thus, considering the fact that the temperature of the solar corona is millions of degrees Kelvin hotter than the sun's visible surface<sup>1</sup> and that the prominences bringing solar matter from deeper areas of the sun are at least 10,000 degrees K cooler than the surface of the sun,<sup>1</sup> we must conclude that the source of energy is outside the sun, not inside. Since the source of solar energy is outside the sun<sup>8</sup> and the solar NEMF has the shape of a torus (donut), according to nonlinear physics when the sun spins clockwise both ends of the axis of spinning will be vortices sucking energy in from outside. This could happen only and only if the sun is vortex on top of anti-vortex and as we explained in,<sup>6</sup> this is the basis of the torus shape NEMF.

The sucked in energy increases the speed of spinning of the donut, the sun becomes more bulged at the equator, and its turbulence increases manifested as two chains of alternating vortices and anti-vortices running on both sides of the equator. The openings of these vortices and anti-vortices are observed as solar spots during periods of solar activity. When the pressure at the equator reaches the critical point, which the solar plasma can tolerate, the clockwise spinning will stop and the Sun will start spinning counterclockwise to release the accumulated pressure. According to nonlinear physics, when the sun spins counterclockwise, both ends of the axis of spinning of the donut shape NEMF are anti-vortices releasing out the accumulated in the sun excess of energy.

Thus, the energy that sustains the high solar activity is sucked in

from outside the sun during clockwise spinning of the sun, which bulges the sun at the equatorial area and increases the turbulence there. When a critical point of bulging is reached, the sun starts spinning counterclockwise, and the excess of solar energy is released back to the environment. This is a period of very low or no solar activity. Thus, the Sun breathes energy in and out and this sustains its life in the way we breathe air in and out and this sustains our life. Beside air, we also breathe energy in and out, but we are not quite aware of this, and this will be the subject of another article.

## Acknowledgments

None.

## Conflicts of interest

Author declares that there is no conflict of interest.

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