Torsind as a Recorder of a Possibly New Energy

Alexander F. Pugach

Main Astronomical Observatory NASU, Kiev, Ukraine

E-mail: pugach@yandex.ru; pugach@mao.kiev.ua

Abstract- **A preliminary analysis of the four-year quasi-continuous observations of the reaction of the ultra-light disc torsion balance (the so-called torsind) has been performed. It is shown that the torsind response to unidentified natural phenomena in the period 2009-2013 has increased by about two orders of magnitude.**

It is found that besides the well-known responses to solar/lunar eclipses and other astronomical configurations the torsind sometimes responds very clearly to signals of unknown nature causing continuous rotation of the torsind`s disc. Some descriptions of these phenomena called "spikes" are given including examples of actual observations. Also parameters of several spikes are indicated.

Keywords- Torsion Balance; Torsind; Solar Activity; Spikes; Spiral Vortex Radiation

I. INTRODUCTION

Relying on the four fundamental interactions that are known to science, modern physics has partially explained the world around us.

However, there are still many phenomena that are beyond our understanding within the framework of these four categories.

Scientists feel the need to bring a fifth force into play, a force which, so far, has not even a name, let alone a theoretical foundation /justification or reliable experimental basis.

Some scientists consider the fifth force to be an alternative or addition to gravity [1], some try to explain its by long spin-spin interactions [2,3], some consider that it is associated with dark energy [4].

The latest publication is remarkable because it reflects an idea that sometimes occurs in the scientific literature. Namely, that the fifth interaction may be associated with rotation, vortices as well as the torsion field.

In this case, the torsion pendulum and the torsion balance may be useful for examining this possibility.

In recent years astronomers have begun to use a new device – the torsind – that allows certain unconventional astronomical observations. It is able to record parameters that are not accessible by other astrophysical equipment. In particular, it "feels" sunrise and sunset events, the transit of Venus across the sun`s disk, and Moon-planet conjunctions, and very clearly responds to lunar and solar eclipses [5]. A solar eclipse causes a torsind reaction even when the unit is located deep underground, and even when the eclipse occurs on the opposite side of the Earth [6].

Special studies have established that the torsind perceives an unexplained influence which can be associated with neither gravity nor electromagnetism. Perhaps it is responding to a new kind of solar radiation unknown to modern science. The special significance of this radiation is that it transfers a torque which causes a torsind disk to rotate.

This article aims to show that the torsind reaction increased by at least two orders of magnitude in recent years.

II. DESCRIPTION OF THE TORSIND

The torsind is a specific type of torsion balance that uses a very light metal disc instead of the linear beam of a classical unit, suspended from a monofilament made from natural silk, instead of quartz or a rigid suspension. The housing of the torsind is made from a quartz cylinder (Fig. 1). The design of such a balance makes it insensitive to variations in gravitational potential and ensures that it is unaffected by gravitational (tidal) influences from any direction

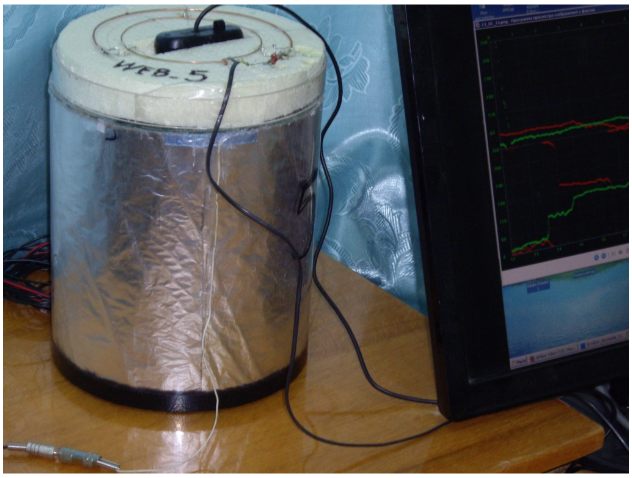

Fig. 1. A general view of the torsind.

A web-camera monitors the disc rotation. The webcam is connected to a computer, and is mounted above the upper face of the cylinder.

The device used is fully automated and does not require the presence of an observer. A detailed description of the device may be found in [7]. Since mid-2008 a torsind has been sited in the Main Astronomical Observatory (Kiev, Ukraine) in an isolated, shaded room with tightly closed doors and windows, the entrance being barred to outsiders. Our observations were performed in very favorable conditions:

- the device was installed on the 4th floor of a disused telescope tower;
- absence of any mechanisms within 50 m, such as motors and generators or moving mechanical objects;

- absence of electrical and wireless devices (except for one computer);
- no mechanical vibrations;
- complete silence and absence of strong light and heat radiation.
- closed room, no visitors. Access to the room was only available to the leader of the experiment.

Over the past 3 years no significant changes have been made, either in the instruments themselves or in the method of measurement.

III. RESULTS OF THE OBSERVATIONS

The purpose of the observations was to continuously detect the rotation of the torsind disk. One measurement was taken each minute. Thus 1440 readings were obtained , proving the smooth operation of the device during the day. Changing of these readings over time demonstrated the diurnal dynamics of the disk rotation. Fig. 2 shows an example of a diagram when the torsind behavior was relatively calm, and the amplitude of the variations did not exceed 360 degrees.

If during a day the torsind disk executed a few revolutions, then the raw unprocessed diagram has a form similar shown in Fig. 3. This is because the scale of the device was only calibrated from 0 to 360 degrees.

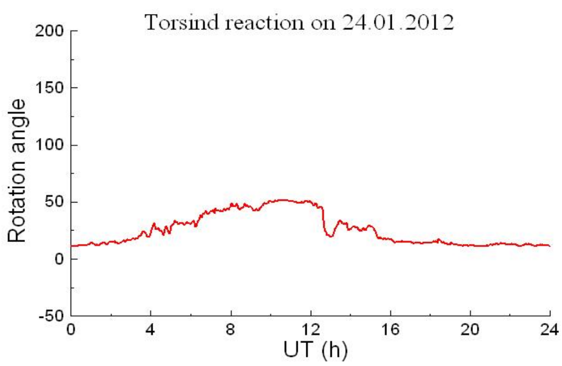

Fig. 2. The typical torsind reaction within a day

Thus, if the disk of the device makes more than one full revolution, then a discontinuity appears at the point 0=360 (in Fig. 3 three such gaps are present on the diagram). Such a curve should be made continuous, eliminating gaps at 0=360 degrees.

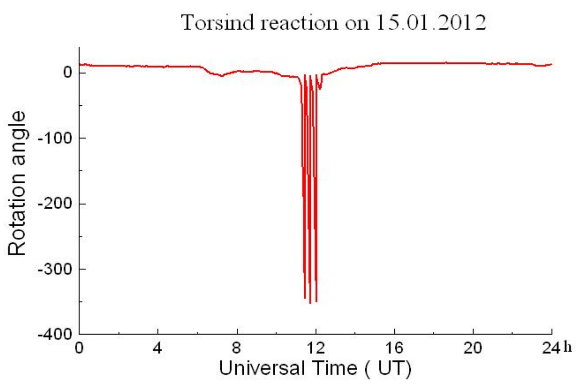

Fig. 3. A raw unprocessed diagram

For this, all values lying after break point must be changed by ± 360 degrees, depending on in which direction of the disk is rotating, clockwise or anticlockwise.

A revised continuous diagram for diurnal observation after this treatment looks as shown in Fig. 4. It should be borne in mind that the Y- ordinate has no absolute zero point. Therefore, all readings can be shifted along the axis Y by an arbitrary number of (n * 360) degrees.

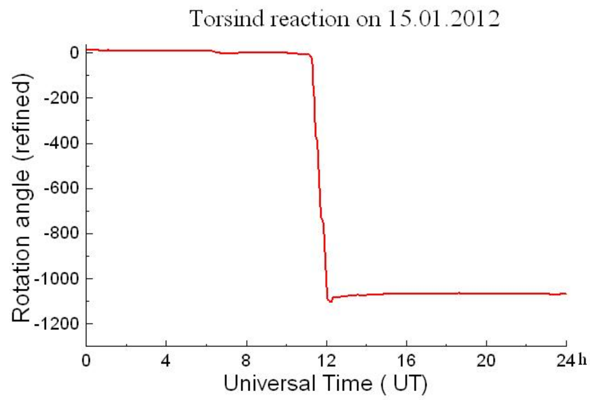

Fig. 4. The revised diagram for the observations shown in Fig. 3.

A number of such refined daily measurements were considered to be a random sequence, and a simple statistical method was applied for this numerical sequence. We determined an average value $\mathbf{a_0}$ of the random variable and a standard deviation **SD** (in degrees) for the each day. The such determined parameter **SD** can be considered as an indicator of the instrument response or as a degree of activity of the process which causes the torsind disc to rotate.

The primary purpose of this publication is determination of the parameter **SD**. The study has shown that on average the values **SD** increased over the period 2009-2013 as indicated by the graph in Fig. 5.

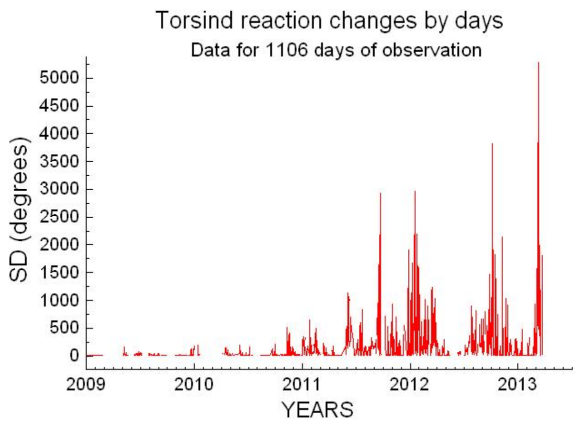

Fig. 5. Change of the parameter SD over time

IV. COMPARATIVE ANALYSIS

As can be seen from Figure 5, the parameter SD has grown at around two orders of magnitude over a few past years. There is good reason to believe that the SD growth may be associated with the increase in solar energetics.

Thus a comparison of the SD parameter with the solar activity index SN was carried out. This index SN depends on the number of sunspots. Fig. 6 shows the variation of the index of solar activity according to the Solar Influences Data Analysis Center (SIDAC) at the Royal Observatory of Belgium.

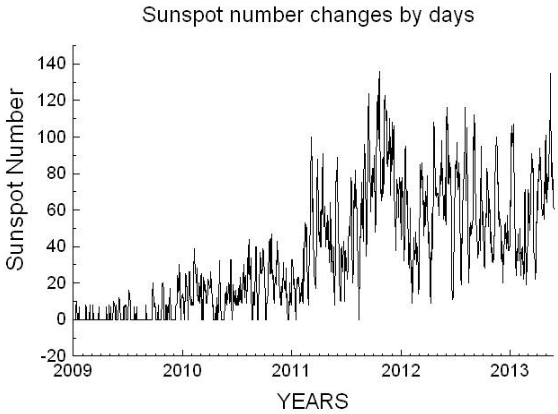

Fig. 6. Change of the Solar Number (SN) over time

Comparison of Figures 5 and 6 suggests their similarity. However, an attempt to find the direct correlation between the parameters SD and SN did not lead to positive results. Despite the general trend towards an increase, most of the individual peaks or minima on the curves do not match.

Approximately the same pattern is observed when comparing the monthly averaged SD and SN data. Monthly averaged data for the torsind measurements and for the solar activity index are shown in Fig. 7 and Fig. 8 respectively.

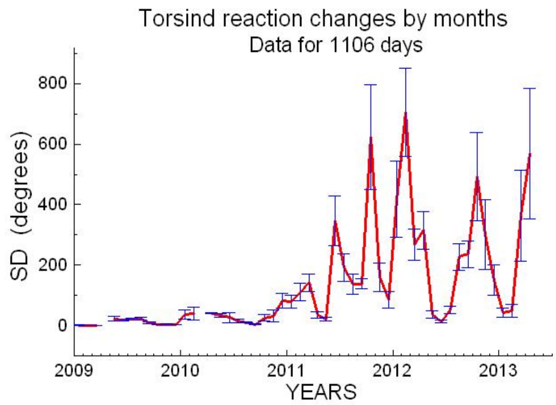

Fig. 7. Monthly averaged data presented in Fig. 5

When comparing Figures 7 and 8, one can see the similarity of both the curves, which tends to increase. Each of the graphs clearly distinguishes several significant peaks of increasing amplitude.

However, the peaks in the Figures 7 and 8 do not coincide with each other, and they also have different widths.

In addition, a correlation between the SD and appearance of solar flares was not found. Connection with cosmic rays was not studied.

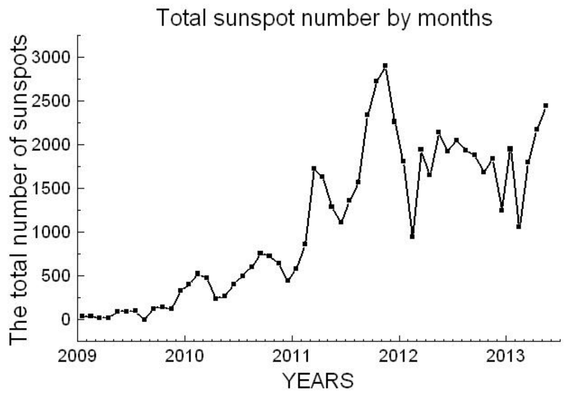

Fig. 8. Monthly averaged data presented in Fig. 6

One of the reasons why poor agreement between SD and SN exists will be discussed below.

V. SPIKES

A cursory analysis of our observations indicates that the torsind does not only respond to the planet-sun configurations. In some cases a reaction to certain factors, not associated with astronomical phenomena, seems to be much stronger.

High torsind activity in particular dates (see, e.g., Fig. 4) is due to the very powerful effects that can be described by the word "spike". Conventionally, the spike is an event when the torsind disk makes 2-3 or more consecutive revolutions. However, in some cases, the amplitude of a spike can reach several thousand degrees.

A spike is called “double” when the disk rotation in one direction is then followed immediately by a rotation in the opposite direction after the extreme point is reached. If such a change does not occur, and the disc only rotates in one direction, the spike is “single”.

Clockwise rotation of the torsind disk is conditionally called "right-handed". Rotation in the opposite direction is left-handed. Thus, a double spike necessarily includes right and left rotations.

If the beginning of a double spike corresponds to the left rotation (i.e. reduction of the readings) such a spike is called "negative"

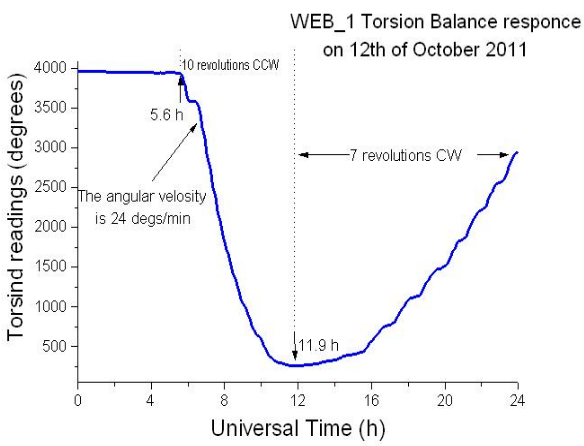

Fig. 9. An example of a double negative spike

Fig. 9 shows a plot of a negative spike recorded on October 12, 2011. On this day the torsind initially made 10 full revolutions CCW for 6.3 hours, and then from 11.9 UT it did 7 revolutions in the opposite direction.

A positive spike of a very high amplitude was registered on 16.01.2012 (see Fig. 10). Its characteristics are indicated in the figure itself.

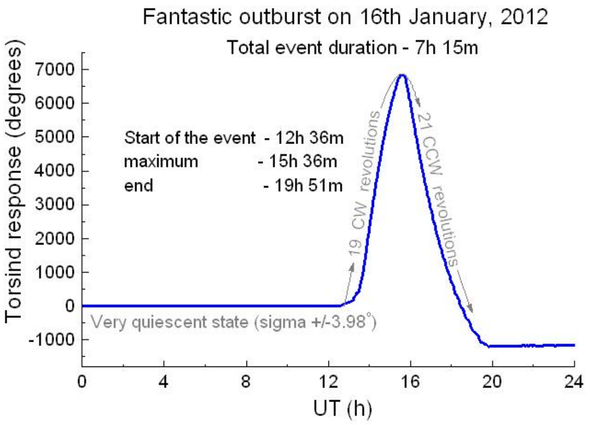

Fig. 10. An example of a double positive spike

It is noteworthy that prior to the spike the torsind disk remained at approximately the same position for a few hours. At that time, it showed only small fluctuations with a standard deviation $\sigma \approx \pm 4°$. Then from 12h 36m to 15h 36m the disc accomplished 19 full CW revolutions. Attention is drawn to this sharp transition from almost absolute rest to very high activity.

VI. DISCUSSION

Before analysing the data it is necessary to recall some specific features of the torsind.

As a result of long term research with the device it has been found that the torsind does not respond to effects of gravitational or electromagnetic nature. For example, the torsind does not “feel” the tidal effect caused by the gravitational pull of the Moon. If it had responded, we would have observed a 12.417-hour period caused by the motion of the tidal wave around the Earth. This period has never been observed.

However the torsind distinctly felt a solar eclipse happening on the opposite side of the globe [8]. Further, the torsind very clearly registered the transit of the planet Venus [5, 7]. The distance to Venus at that time exceeded 50 million kilometers. Each of these facts excludes the possibility that the instrument responded to any gravitational/electromagnetic interaction.

We can assume that the torsind, which is an extremely sensitive device, detects a new non electromagnetic solar radiation, which is still unknown to scientists. The following facts imply that the source of this radiation is the Sun itself.

- First, the reaction of the torsind is usually stronger in the daytime, when the Sun shines. Figure 2 partially illustrates this statement.
- Second, the torsind responds to sunrise and sunset [7].
- Third, the torsind reacts to solar and lunar eclipses, when the intensity of the radiation coming from the Sun to the Earth changes [6,8].
- Fourth, the torsind registered clearly the moment of change of intensity of the incoming solar radiation during the Venus transit across the Sun`s disk [7].
- Finally, in recent years the frequency and the intensity of the spikes are increasing. This process is accompanied by an increase in solar activity, as determined by the sunspots. This fact certainly points to a connection of the parameter SD with the processes occurring on the Sun.

If the increased response of the torsind (SD) and the increase sunspots number (SN) both are the result of growth of solar activity, why there is no significant correlation between SN and SD?

A possible answer lies in the fact that both the torsind reaction and the growth of SN are secondary processes. They both depend on some not yet studied primary process in the solar interior. Both the spot-forming activity of the Sun and the response of the torsind are the result of a parent process, but are manifested in different ways.

From the viewpoint of mechanics the torsind reaction means that solar energy carries a certain torque. What else can force the disk to rotate around the vertical axis?

We assume that the so-called solar spiral vortex emanation (SSVE) is present in the solar non electromagnetic radiation. The SSVE idea was suggested by professor G.A. Nikolsky [9] Saint Petersburg.
. This hypothesis is consonant with our results in the sense that it allows the transfer of a mechanical angular momentum by the fluxes of the solar radiation. And, thus, it can be accepted as a first approximation to explain the reason of the disk rotation.

This type of radiation is not well explored. Perhaps its study will lead to the discovery of new mysteries of the solar radiation.

Now it is premature to consider practical application of the observed effect. The current situation looks very similar to that of 1820 when H.C. Oersted observed the small amplitude vibrations of a magnetic needle placed near an electric current conductor. Could someone at that time foresee the possibility of construction of powerful electric motors and generators in the future? Today, we also do not know what practical use of the torsind will result in.

VII. CONCLUSIONS

Using of the torsind opens completely new possibilities for the study of unconventional phenomena occurring in the space environment.

With a very high sensitivity and low inertial mass, the torsind can detect astronomical phenomena which are not yet available for study by the other methods. In particular, in recent years some evidence has been obtained which confirms the increasing intensity of a new energy, presumably associated with the Sun. This energy is interesting because it carries a mechanical angular momentum, which can be used in practical human activity.

Simultaneous basic observations using a lot of torsinds distributed throughout the world would, in our view, be of very great scientific interest.

This idea was proposed by Mr. Alan Stout and supported by the colleagues of the author of this publication.

This idea may seem ambitious. However it should be easily possible by exploiting up-to-date electronics, the resources of the 'open source' community, and a crowd-sourced approach. The scientists of the world who are interested in participating in this program may, through the author of this article, address their questions about getting methodological assistance and about how to make or obtain the necessary equipment, as well as other matters related to the organization of our crowd-sourcing measurements.

A mechanism of transfer of an angular momentum from the environment on the torsind disk is not yet known. This issue is not an objective of this article. The purpose of this publication is to describe the observed effect and to get other researchers involved in its study.

It is to be hoped that the results of such collective measurements may bring us fundamentally important information about the reasons that cause the rotation of the torsind disk.

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REFERENCES

J.H. Jenkins, E. Fischbach, J.B. Buncher et al. *Evidence for Correlations Between Nuclear Decay Rates and Earth-Sun Distance*, arXiv:0808.3283v1 [astro-ph]. 25 Aug 2008, http://arxiv.org/abs/0808.3283.

L. Hunter, J. Gordon, S. Peck, D. Ang, Jung-Fu Lin, *Using the Earth as a Polarized Electron Source to Search for Long-Range Spin-Spin Interactions*, Science, Vol. 339 no. 6122 pp. 928-932, 2013 DOI: 10.1126/science.1227460 .

Press Release 13-029, National Science Foundation, February 21, 2013 NSF-funded Researchers Propose Promising New Technique for Probing Earth's Deep.

Amol Upadhye, *Dark energy fifth forces in torsion pendulum experiments*, Phys.Rev. D86, 2012, 102003 arXiv:1209.0211 [hep-ph].

A.F. Pugach, *Observations of Astronomical Phenomena Using a Torsion Balance* (in Russian), Physics of Consciousness and Life, Cosmology and Astrophysics, V. 9, no. 2, pp.30-51, 2009.

D. Olenici, A.F. Pugach, *Precise Underground Observations of the Partial Solar Eclipse of 1 June 2011 Using a Foucault Pendulum and a Very Light Torsion Balance*, International Journal of Astronomy& Astrophysics, V. 2, no.4, pp. 204-209, 2012.

A.F. Pugach, *The Torsind – a Device Based on a New Principle for Non-Conventional Astronomical Observations, International Journal of Astronomy and Astrophysics*, V. 2013, no.3, pp. 33-38 doi:10.4236/ijaa.2013.32A006 (http://www.scirp.org/journal/ijaa).

A.F. Pugach , D. Olenici, *Observations of Correlated Behavior of Two Light Torsion Balances and a Paraconical Pendulum in Separate Locations During the Solar Eclipse of January 26th, 2009*, Advances in Astronomy, V. 2012. – Article ID 263818, 6 pages doi:10.1155/2012/263818.

H.A. Nikol`skii, *On the Fifth Fundamental Interaction* (in Russian), Proceedings of the International Scientific Conference, Sochi (Russia), 25th-29th of August, 2009, pp. 56-75.