

# The Alternative Hypothesis of the Luminosity of the Sun

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## Abstract

This hypothesis discusses the alternative hypothesis that the luminosity of the stars and the Sun are quantum vacuum fluctuations occurring near the boundary of four dimensional world and multidimensional world. Thanks to this, the Sun can emit photons, not only but also, for instance, neutrinos of different varieties.

## Introduction

The Sun is the nearest star to us normal, and its luminosity, corresponding to  $(3.846 \pm 0.008) \times 10^{26}$  Watt, well known from experience [1]. The luminosity is the source of life on the Earth. But explain this simple fact on the basis of scientific and universally accepted submissions; we are not in the states. Judging by the remains of ancient organisms on the Earth, the luminosity of the Sun has not changed significantly in the last 3 billion years, and there are particular bases assume that it shone a long before that. Many sources of luminosity the Sun had been rejected because they could not will provide the energy the Sun for so long.

In 1939, the Bete offered as a source nuclear reactions, in the heart o the Sun, under the influence of high temperatures [2]. This is thermonuclear reactions. Until recently, it seemed, was the only possible source of luminosity of the Sun. The next section will discuss the crucial issue of law energy conservation (LEC), and then will be given a new experimental data that are not compatible with the thermonuclear source the luminosity of the Sun.

The following are the remarks of some of our leading scientists on the issue. Even 80 years ago Bor N and Landau L believed in the Theory of Stars that LEC is broken in the process of luminosity of stars [3]. The same conclusion at a later date, based on their observations in the Pulkovsky Observatory Kozyrev [4]. The possible mechanism of apparent violations of LEC was proposed by Hawking [5] for example, the luminosity of black holes. This mechanism is quantum fluctuations the vacuum near the event horizon.

As far as near, and what is event horizon, will discuss at a later date. Finally, on the existence as the vacuum environment which wrote Gliner [6]. Its existence was confirmed in 1998 [7]. It appears to be is about 70 percent of all matter in the Universe.

In conclusion, consideration will be given to the reasons for the accelerating expansion of the universe. It's an alternative hypothesis presented in this work are often linked to the luminosity of the stars and the Sun.

## The Possibility of Violation of the Law of Conservation of Energy

The very idea of what time the Sun is shining, should be a source of energy, is prejudiced. This assertion is not based on experience. Rather, it is based on the belief that the LEC should always run. But this is far from the case. Aware that it may be disrupted briefly in microcosm. In our ordinary world LEC is a consequence of invariance the system on time shift by varying amounts. Here the time absolutely. But in general relativity (GR), there is no absolute time. Here it locally. Therefore no in GR and LEC it in the usual sense.

However, LEC does not lead to any controversy in the world of conventional size and time their observations. Perpetual motion machine in the sense of obtaining useful work in our world still is impossible. Another thing, if we are dealing with an unusually large bodies, when you cannot neglect the effects of GR. Here other laws may apply. After all energy is not a substance, it is a function of system status. It depends on the parameters, which are usually not defined. We can, for whatever reason, lose some parameter, and then we LEC will seem broken. Therefore, a source of energy in the Sun might not be, whereas, however, the Sun will shine.

All of the effects associated with the luminosity of the Sun, compared with its negligible dimensions. If you divide the mass of the Sun by the mass of proton, we get that it is approximately from 1057 protons and emits the Sun  $2.4 \times 10^{39}$  Mev per second. For 10 billion years the Sun will reject every proton energy of about one Mev. So if LEC and violated in the alternate hypothesis the luminosity of the Sun, the scale of the breach does not exceed the influence of scale effects from our lives.

## It is not any Thermonuclear Reaction

In general, fusions, regardless of temperature, the Sun, like the land of course go. But here's s outside, according to Kozyrev AN, is not excludes the same appearance and a whether they are the primary source of luminosity of the Sun ; this is an issue that we still have to prove. Consider what experimental data confirm that the thermonuclear reactions provide luminosity of the Sun. Contrary to oft allegedly, there is no direct evidence, and probably will be gone. All the evidence is circumstantial. There are, in fact, only one such proof. This coincidence of neutrino flow measured the Sun settled on the standard solar model (SSM) the making of some types of neutrino to another type. Without such integration possible transformations measured stream in all experiments, neutrino found in 2, or even 3 times less current. This is the largest opening in many years according to Ginsburg was made in the year 1998 [8]. This article was written in the year 2002. But for ten years the situation has changed.

During Davis experiment it was natural to take it that all recorded

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neutrinos coming from the Sun, but after the experiment it became clear that this is not the case [9,10]. In this work, for 1117 days, weighing 22500 ton, there were some 100530 events, spread evenly on the cosine of angle with direction from the Sun, and only events above 11913 this even distribution, with an angle greater than cosine 0.750. Thus, only about 0.12 of all events can go from Sun. Other events are evenly on all sides. And then the variance calculation for the SSM with experiment will in all significantly more experiments. So, in experiments of Davis et al. [9] and Altman et al. [10] recorded 2.55 and 2.73 conditional events, but from the Sun will only 0.12 from this number. As the SSM estimated them to be 9.3 and 6.62 conditional events. It is clear that the experiment is still a source of radiation energy from the Sun. Starts the procedure outright fit the observed in experiment, but under the SSM event most of the stream neutrinos are not registered will have Solar origin, and He does not need to contain only one type of neutrino. So, detection of some other type of neutrinos is not means of their transition into this type.

They may be there initially. It would be if we knew we were in the Sun are born only electron neutrinos. But there is no experimental evidence of this. Simply postulated that the Sun produces only one type of neutrino. This is the second widely held misconception.

The Sun is the largest body in the vicinity of the Earth. Primary cosmic rays bombarded from all sides by the Sun. Yes they are, and without the Sun is not come in a vacuum. The neutrinos are born all those varieties in inelastic interactions of high energy particles with the Sun protons and protons of interstellar space. What did surprise What on earth are all three types neutrinos.

And, finally, as a result of quantum fluctuations dark energy, about which more will be, can be born not only photons and neutrinos, all three varieties. We register them as oscillation. Now about the fairness of the SSM and our perceptions of the internal the structure of the Sun. No experimental data on this. Until the summer of 2012, it was believed that information about the depths of the Sun can give only the neutrinos. And all efforts were directed at the harmonization neutrino fluxes from calculations of the SSM with the experiment. This was, after all, does and is deemed to be proof of the existence the thermonuclear reaction on the Sun.

But just at this time experimental work was by definition plasma flow velocity under the surface of the Sun [11]. The work was done at NASA'S Solar Dynamics Observatory. It is based on an analysis of millions of images of the Sun, obtained with high resolution. Essentially, for the first time made flow tomography plasma under the surface of the Sun.

To the surprise of researchers, the flow rates plasma under the surface of the sun appeared in 20, or even 100 times less than expected on the SSM. Practically, this coincided with the measured and expected flow of neutrinos. An abnormally low plasma convection beneath the surface of the Sun, observed in this experiment, puts an end to the SSM, on all of our assumptions about the inner workings of the Sun.

As the SSM and is at the center of the Sun are nuclear reactions, there is heat that using Convection is passed to the periphery, where it radiates. If there is no convection, means of the insides of the Sun just outright wrong. In vain we worked hard and were calculations under the experiment.

So, for 70 years, the hypothesis that the luminosity of the Sun are nuclear reactions there is no, even indirect, experimental evidence of this. To harmonize with the SSM were deployed great efforts but it

turned out to be in general, fusion, regardless of temperature, the Sun, like the lands of course go. But here's a whether they are the primary source of luminosity of the Sun ; this is an issue that we still have to prove.

## Sponsors an Alternative Hypothesis

Interest to the luminosity of the Sun arose long ago, but will not refer to the earliest hypotheses that have not been able to provide much a luminosity of the stars and the Sun. Let's start with the fact that Lev Landau in the 1931 year met with Niels Bohr, and the result of that the meeting was the article published by Landau [3]. It is writes: *Following a beautiful idea of Prof. Niels Bohr's we are able to believe that the stellar radiation is due to simply a violation of the law of energy.*

It is remarkable that Dau especially emphasizes the idea of Boron possible violation of LEC in solving the luminosity of stars. This was a very bold statement by two great scientists of the last century. Landau said that violation of LEC occurs when the mass of the star reaches about 1.5 solar masses.

In this connection, the star luminosity  $L$  and its mass  $M$  in 1946, the year in his doctoral thesis [4] drew the attention of our famous astronomer Kozyrev AN. He reviewed dozens of stars and found that the dependence of the luminosity  $L$  of mass  $M$  is universal. This makes it impossible to exist in the stars of any energy source that would not depend on radiation.

He writes the following: *this data should be fact: the fundamental importance of the luminosity of the star is a function of mass and radius mixed throughout their possible values. In the long-term existence of the stars must be equal in power generation the star and its flow. If these processes are independent of each other, it follows a hard limit of possible configurations of stars and the functional dependency would be impossible. Therefore, there is no energy in the stars, which would not dependent on its flow....Star turns out to be a machine that produces energy. Based on the law of conservation of energy, still, the star derives its energy from outside.*

Note that the last words quotes A. N. Kozyrev literally coincide with the words of L. Landau. But the nuclear boom began, and words our science luminaries were forgotten. Now it's time think about it, especially because it has become more clear mechanism of apparent violations of LEC in the luminosity of stars and Sun.

*As the star derives its energy from outside?!*

## Mechanism Luminosity

The answer to this question was received back in 1975, the year Hawking [5], when considering luminance of black holes (BH). This is not ordinary objects. However, until the decisive evidence of the existence of the pilot has not received. There are only candidates. But from a theoretical point of view there should be plenty. At the fall of particle or body on the BH, they cross the line that separates our world from the BH.

This line is called the *horizon event*. It is a new physical concept, which wasn't there. How, for example, and that was before the big bang of the Universe. Beyond the horizon, in no time, and there is no our physical laws. There's another world.

So here, Hawking showed that if there exists like a vacuum environment, it inevitably there are fluctuations. The question of the existence of such an environment would be considered in the next section, because it is very important. These fluctuations occur

spontaneously, at the time of order  $10^{-43}$  seconds, and consist of a particle-antiparticle pairs. The LEC violation occurs, but only for a very short time.

If all this is near event horizon, one of the particles may catch his cross. Hence it is clear that *near* means at a distance of less than  $10^{-33}$  cm. This is a natural Planck length. Particle, which crosses the event horizon will disappear from our world, is not observable. And the other, with its energy and momentum will remain in our world, and will be further monitored. It would seem that the LEC is broken.

Particles used were not, and then it appeared. You can certainly assume that the particle, gone beyond the horizon, has negative energy, and then the LEC will be saved. But check it out we will, in principle, will not.

### State Like a Vacuum

This is what today is known as dark energy. It should not be confused with dark matter. The latter, presumably, is composed of particles of unknown nature, interacting with other particles only through gravity. But dark energy is not composed of particles, this vacuum.

First revealed in 1965, the year that the algebraic structure of the energy-momentum tensor in GR, it is assumed that there is a macroscopic form of the substance, possessing the properties of the vacuum was Gliner [6], theorist of Physics and Technology Institute, Ioffe AF. This state is the only possible ending the result of the process of compression of gravity, or the generation of BH.

Gliner EB also raised the issue of the interaction of vacuum, our ordinary world. After working Hawking S, it became clear that this interaction takes place in the form of particles near event horizon. The hypothesis of Gliner E the physical nature the Big Bang, the Universe was in 1998 year experimental confirmed in [6], and later in other pilots the works. So was accelerated expansion of the Universe, Sol Perlmutter, Brian Schmidt and Adam Rice for this discovery was given to the Nobel Prize in the year 2011. Today, the existence of the dark energy is installed. Mass of dark energy is equal to  $(7 \pm 1) 10^{-30} \text{ g/cm}^3$ . Almost 70% of the substances in our Universe is state like a vacuum, as predicted by Gliner [6]. If the hypothesis presented here the luminosity of the stars and the Sun is true, then the expansion of the universe is explained very simply. Luminosity is the appearance of photons from the vacuum. And their emerging demands a certain volume in phase space. So they appear, the entire phase volume should be bigger.

Summarizing, we can say that the S. Hawking mechanism will work around the interface of our world, and the multidimensional world that assumes the existence of a higher dimensions. A lot of such theories and, perhaps, the most striking experimental evidence of their existence was the awarding of the Nobel Prize in chemistry in 2011, the Israeli scientist Sehtman [12] for the discovery of new structural organization of matter in the form of quasicrystals. For symmetry, banned in our usual space, may be authorized at the intersection of our space, with a different, multidimensional space. Quasicrystals are also in our country as early as 1940, but since this can not be ever, then it was suggested their extraterrestrial origin.

Mechanism of appearance of photons *outside*, according to Kozyrev AN, is not excludes the same appearance and neutrinos. The physical vacuum can consist of a pair of neutrinos and anti neutrinos. Under the influence of gravity, one of these particles will leave behind event horizon, and the other will experience in our world. In such a result, neutrinos can appear not only on the Sun fusion reactions, but and outside.

Well forgotten hypothesis about the nature of energy, responsible for the luminosity of the Sun, has a right to exist along with currently accepted hypothesis that the Sun is burning hydrogen. On stars, and the Sun can not burn anything. And only experiment can solve the question of fairness or otherwise, of the hypothesis.

### Conclusion

The alternative hypothesis is the luminosity of the stars and the Sun was young and brilliant scientists of the last century, Niels Bohr, and Lev Landau. A. N. Kozyrev showed in his observations that there can be no sources of energy in stars, torn from the radiation. Stephen Hawking discovered details of apparent violations of the LEC during luminosity of stars in process of the quantum fluctuations of the vacuum.

Gliner, based on GR, predicted the existence of macroscopic states of matter as vacuum. It interacts with our world only gravitationally. Three scientists from the different groups, already in our time, for this discovery were awarded the Nobel Prize. Under the alternative hypothesis becomes clear universal mass dependence of luminosity. It appears as a consequence of gravitation.

It seems to us that the Sun emits lots. But that is only because the Sun is the only large, unimaginable the body near the Earth. Neglected properties with such a large mass of bodies we have in law. We do not have the expertise to do this.

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