International Journal of Unconventional Science
Issue E1, page 16-34, 2016

received: 01.09.13
accepted: 01.10.13
http://www.unconv-science.org/en/e1/kernbach1/

On metrology of systems operating with 'high-penetrating' emission

Serge Kernbach

***Abstract*—This work surveys different systems, which measure the effects produced by a 'high-penetrating' emission. It attempts to introduce metrology of such systems based on multi-parametric models and synthetic scales. Tests and scores for active and passive generators as well as for detectors of such an emission are proposed. As an example, the results of metrological tests for the LED generator in Relative Impact Units (RIU) are demonstrated.**

I. Introduction

Works dealing with a 'high-penetrating' emission are frequently confronted with two major problems: lack of commonly accepted theoretical background and a complexity of detecting this type of emission, see e.g. [1]. Both problems are related to each other – controversial discussions about theoretical foundations delay a development of detection and measurement methods, see e.g. the discussion around [2], [3]. Moreover, it is practically impossible to develop and implement metrological foundation due to lack of measurement units and appropriate scales. In turn, without metrology it is impossible to certify corresponding generators and detectors, to evaluate the effectiveness of various treatment approaches. Thus, the metrology of 'high-penetrating' emission is *de facto* related with two following issues. On the one hand, it concerns a control over corresponding products, which are already available on the market or are in preparation for production. On the other hand, experimental data obtained by certified sensor systems should be used in developing corresponding theories, which should provide a reasonable theoretical explanation.

Empirical research over the past several decades contains a number of diverse methods for detecting the 'high-penetrating' emission [4], [5], [1], [6], which are briefly surveyed in section III. In accordance with these methods, the 'high-penetrating' emission impacts biological objects as well as different technical systems and processes. The question about metrology was already discussed [7] and certain certification systems have been registered[1]. However, until now, attempts to introduce a natural scale and units for measuring the 'high-penetrating' emission were unsuccessful. There are several reasons for this: very small changes of the measured parameters; small absolute values – almost on the level of instrumental noise; results depend on the measurement method; lack of a recognized standard source of such emission; different and often incompatible measurement systems; the effect of 'unpredictable reproducibility' of results. In some cases, such as in the certificate 'Biostandart', the evaluation was performed by human operators[2]. Consequently, an instrumental identification and measurement of impact from a biological or non-biological 'high-penetrating' emission is urgently required.

In such cases, the metrology involves multiparametric measurement models [8] and introduces so-called synthetic scales for evaluation. An example is the international recommendation OIML MR63 (OIML R 63) [9], regarding oil parameters[3]. Synthetic scales are also frequently used in measurement of software performance [10] and various sociological studies [11]. Characteristically, the development of standards as well as recommendations for metrology of oil products was performed by several research organizations, i.e. not only by ISO[4] and OIML[5]. In this regard, the Association of Unconventional Research together with metrological organizations both in Europe and in Russia might come up with such an initiative.

This article represents the second work in the series of review papers devoted to different aspects of the 'high-penetrating' emission. In the first paper [12] the historical origin of this topic was considered. Here, we briefly survey the state-of-art in measurement of 'high-penetrating' emission and treat metrological aspects of corresponding systems. It is also indented to demonstrate

Cybertronica Research, Research Center of Advanced Robotics and Environmental Science, Melunerstr. 40, 70569 Stuttgart, *serge.kernbach@cybertronica.co*

[1] For example, in accordance with the law of the Russian Federation 'certification of products and services' the certification 'Biostandart' was registered in the State Register on 12.02.1998 under the number РОСС RU0001.04ЮЩ00.

[2] Requirement ЦРББ002-97 to bioenergic security devices and systems that are designed to impact consumers by eneroinformational potential.

[3] ISO/TC 28/SC 2 - Measurement of petroleum and related products.

[4] International Organization for Standardization.

[5] International Organization of Legal Metrology.

peer-reviewed research results in this area, published in Russian sources. Tests and methodology for evaluating experimental results based on multiparametric models and corresponding synthetic scales are proposed. This work is structured as follows: section II is related to phenomenological definition of 'high-penetrating' emission and different concepts intended to explain the observed phenomena. Overview of different measurement methods is given in section III. The methodology, the eight proposed tests, and the Relative Impact Units (RIU) are discussed in section IV. Sections V and VI demonstrate an exemplifying application of the proposed approach for the LED generator. Finally, the section VII summarizes this work and draws some conclusions for further research.

II. The 'high-penetrating' emission

Since a consistent theoretical foundation for a 'high-penetrating emission', which is accepted by the majority of scientific community, is not yet available, we can only identify and characterize the 'high-penetrating' emission phenomenologically.

The influence of 'high-penetrating' emission means a physical process, whose effect is measured in biological, chemical and technological experiments, and the nature of which is not fully understood at present. Characteristics of this process are an extremely low level of electric and magnetic fields, and the exclusion of such factors as mechanical, thermal, acoustic and other effects. Known sources of 'high-penetrating' emission – with similar experimental evidences – are twisting bodies [13], magnetic fields [14], laser/LED emitters [15], [16] , [17], geometric forms [18], [19], [20], hydrodynamic systems [21], spin-ordered materials [22], alternating electric field with a rotating polarization vector [23], [24], fiber optic systems [25], systems with orthogonal magnetic and electric fields [26], systems with scalar and vector potentials [27], focused cosmic emission [28], processes that change entropy [29] etc. – an overview can be found in the [1]. The emission also influences various biological objects and processes, participates in nonlocal effects [25]. Similar properties possess the magnetic vector potential (the Aharonov-Bohm effect [30]), see e.g. [31], [32]. At the moment it is not known whether these emission sources are a manifestation of the same phenomenon, or they are different phenomena with similar manifestations.

Due to ultra-low electromagnetic fields, this phenomenon is sometimes referred to as 'non-electromagnetic' emission [1]. The concept and theory of spin-torsion nature of this phenomenon are developed – the theory of physical vacuum by G.Shipov [2], phenomenological concept by A.Akimov [14], concept of own spin fields by A.Bobrov [33], as well as theoretical works on spin-torsion effects in ferromagnets [34]. Several hypotheses have been discussed to explain the observed phenomena. These include: macroscopic 'quantum' phenomena [35], [36], interacting particles [37], virtual plasma [38], coherent matter [22], superfluid vacuum theory [39], causal mechanics [28], different approaches to entropy [40], [29], the relationship between information and entropy [41], [42] and others.

The characteristic feature of a 'high-penetrating' emission is a close connection with various mental phenomena [43], [44], [45], [46], which are recorded by instrumental methods. Reviews of engineering problems in these studies can be found in [47], [48]. However, there is a fundamental difference between effects produced by the 'high-penetrating' emission and by mental phenomena. The primary does not involve an operator in the measurement, whereas the latter, e.g. in [49], [50], the operator's psycho-emotional state is one of the sensing elements.

The range of phenomena associated with the 'high-penetrating' emission is to some extent different from the accepted paradigm of scientific research. In this context it is necessary to point out the social and scientific debate about these theories and the emergence of so-called 'organized pathological scepticism' [51].

A. Polarization of 'high-penetrating' emission

Almost all researchers underline the polarization feature of 'high-penetrating' emission. One of the first researchers who explored this feature was Kozyrev [28]. That work was extended by his followers, e.g. Lavrentiev [29]. Under certain conditions, there is an increase or decrease in response of thermoresistive sensors. Authors attributed these changes with different polarization of 'chronal processes', which can be expressed in terms of entropy changes. In literature there are also indications to a similar behavior of solid-state oscillators, exposed to so-called 'right or left' polarization of electromagnetic generators [52]. In the papers [6], [7], [53] authors demonstrated the rotation of the flywheel/gyroscope clockwise and counterclockwise, which influenced differently the quartz, magneto-resistive sensors and sensors of radioactivity. Papers [19] and [54] demonstrate a reaction of bio-chemical and quartz sensors located at different areas of pyramids. Changes in the reaction are associated with the polarization of the emission by geometric shapes and different entropic processes. Two types of polarization in non-local experiments are shown in [26] for technical systems, and in [55], [56], [57] for biological systems. Different polarization of natural 'high-penetrating' emission is also associated with various geological anomalies [58]. The paper [59] investigated the effect of amplification and polarization of 'high-penetrating' emission by geometric structures, where the polarization is assumed to be related with entropy. Similar conclusions can be found in other studies.

Thus, two polarization types of 'high-penetrating' emission are mentioned, which manifest in the form of non-specific stimulation or inhibition of biological systems, as well as of increasing or decreasing entropy in a number of physical processes (appeared as e.g. changes of statistic parameters of signals, which are measured by sensors). At this moment it is impossible to say whether the polarization is a feature of 'high-penetrating' emission or a manifestation of other effects, such as the PID effect[6] [60], [61], [49], [56], [62].

III. Known approaches for detecting the 'high-penetrating' emission

As mentioned in the introduction, several methods for detecting the 'high-penetrating' emission are found by an empirical research, see reviews in [4], [5], [1], [6]:

1) operator-based methods (these are not valid scientific methods and are mentioned here primarily by a historical reason), such as dowsing, psychophysical diagnosis [63], building Hatrmann's georitmogramm [64], using different radionic devices [49];
2) macrobiological methods, for example, measuring the conductivity of plant tissues [65] and calculating the relative dispersion of conductivity (RDC) [66];
3) microbiological methods, in particular, yeast activity by measuring the production of CO_2 [17], measuring bioluminescence of bacteria *E.coli* [32], motor activity of ciliates spirostom [31];
4) measuring various parameters of chemical reactions, such as oxidation of hydroquinone solution and recording a differential absorption spectrum [31], the hydration reaction of acetic anhydride and recording an optical density of solution [67], a high-precision measurement of pH by spectroscopy in visible and UV regions by the bromothymol blue indicator and a salt solution $SnCl_2$ [19], the absorption of water and aqueous solutions in the ultraviolet spectrum [68], [69];
5) *in vitro* cell tests, such as the erythrocyte sedimentation rate [31], [70];
6) gemination tests with seeds of corn, triticale, wheat and tomato [71], [72], [73];
7) measurements associated with phase transitions, such as crystallization [74], in particular, ice building [75], [76], polymerization [77], changes in mechanical and microstructural properties of metals after melting [78], an aggregation of homogenate of green leaves [79], [80];
8) measurement systems 'radioactive source – sensor', in particular, a deviation of measured dispersion from the Poisson distribution [7], [6], [81];
9) structurization of water dipoles in the Gouy-Chapman electric double layer [82], [83] and a measurement of dielectric conductivity by using the differential method [84] or by deeply-polarized electrodes [15], [85];
10) changes in properties of solid bodies – dielectrics, semiconductors, ferromagnetics – and detectors based on resistors [28], [70], quartz resonators, capacitors and transistors [53], [86], changes in the magnetic permeability of ferrites [53];
11) changes in some properties of electric fields – e.g. changes of a dark current of photomultipliers [87], registering electrostatic potential of objects by devices like 'IGA-1' (sensors of electric fields) [25];
12) torsion (rotating) systems, e.g. the Smirnov's detector [88], the Kozyrev's torsion balance [28];
13) changes in density and mass of such substances as distilled water, graphite, duralumin, – as a reaction to external irreversible processes [29];
14) changes in statistical parameters of noise in tunneling (quantum) diodes, transistors [89], [90], [91] and mechanical systems [45];
15) using nonlocal properties of 'high-penetrating' emission, such as a transmission of signals over long distances [15], [92], [16], [93], [71], [73], so-called macroscopic entanglement [35], [36];
16) measuring the amplitude and phase shift of signals from RF generators, coupled oscillators or external electric/magnetic fields, and devices on this basis, for example, ' IGA-1' [94], 'Vega', 'Seva' [95] and others;
17) photographic techniques, such as using photographic plates, polymerization of polymers or the Kirlian effect [96];
18) a direct detection of spin polarization, for example, by NMR [97], [22], [4];
19) using the effect of changing the frequency and amplitude of reflected coherent light [98], [99], [100].

In the next section we will validate several tests for the metrological analysis.

IV. Selecting metrological tests and multivariate models

In order to select a multiparametric model, it needs to take into account several following factors. Firstly, the model should reflect different properties of the 'high-penetrating' emission. It must include not only tests with biological and technological systems, but also consider such effects, as the PID effect [61], [101], the 'aftereffect' [102], [103] or nonlocal interactions (the effect of macroscopic entanglement) [35], [104]. Secondly, these tests should reflect different characteristics of the emission. Currently there are known stimulating and inhibiting effects, which possess varying degrees of intensity. Since changes of parameters in these tests are different, it is necessary to introduce weighting coefficients reflecting these changes. It is also necessary to remove subjective elements associated with an operator from these tests. The 'high penetrating' emission is accompanied by EM fields and many interactions – thermal, mechanical, optical and others. During metrological tests, these accompanied interactions should be carefully monitored and by possibility suppressed.

Metrological tests should be selected not only from the viewpoint of scientific methodology, but also by considering their practicality, time and necessary

[6]The PID effect, translated as a 'transfer of information action', is a form of information imprinting approach, which is frequently mentioned in papers, see references. In all review papers we use this term for consistency without discussing its scientific aspects.

equipment. Analyzing the well-known works on detecting the 'high-penetrating' emission in section III, we can mention eight groups, shown in Table I.

Table I
SELECTED METROLOGICAL TESTS.

N	Impact/Effect	Test Case	Type
1	macrobiological systems	germination test of wheat	(1)
2	microbiological systems	measuring zymase activity of yeasts	(1)
3	solid bodies	frequency drift of semiconductor oscillators	(2)
4	EDL of water	measuring dielectric conductivity	(2)
5	statistical properties of some processes	measuring statistical parameters of noise from Zener diodes in avalanche mode	(2)
6	phase transitions	crystallization parameters or ice building	(*)
7	the 'aftereffect'	measuring spatial structures by IGA-1	(3)
8	the nonlocal effects	a signal transmission over long distance with minimum transmitting power	(3)

(1) - % deviation from the test cases;
(2) - absolute deviation from the normal value;
(3) - binary value, 'yes - no';
(*) - a suitable phase-transition-test is currently in development.

These tests have three types of results: (1) the relative deviation of the measured parameter from the reference value, (2) the absolute value in a certain measuring scale and (3) a binary (yes/no) result. All these results may be calibrated in % related to some 'expected' value in a 'normal' or 'control' experiment in which this effect is absent.

Let us denote N these tests as $\Phi = \{\varphi_1, ..., \varphi_n\}$, and the results of each of them as $R = \{r_1, ..., r_n\}$. Because these results are defined as relative, we expect the values

$$r_i^j = \left(\frac{r^j_{i-control}}{r^j_{i-attempt}} - 1 \right) \cdot 100, \quad r^j_{i-control} > r^j_{i-attempt}, \quad (1)$$

or

$$r_i^j = \left(\frac{r^j_{i-attempt}}{r^j_{i-control}} - 1 \right) \cdot 100, \quad r^j_{i-attempt} > r^j_{i-control}, \quad (2)$$

where $r^j_{i-control}$ – the result of a control experiment (or the expected value), $r^j_{i-attempt}$ – the result of the attempt. The indices i are used to identify the test number and the indices j denote the number of repetition of a single test. The reason for choosing (1) or (2) is that many of the tests, such as a reaction of solid-state or EDL sensors have a specific value $r^j_{i-control} > r^j_{i-attempt}$ or $r^j_{i-attempt} > r^j_{i-control}$, which depends not on the level of emission but on external parameters such as temperature gradient.

To calculate the r_i, we expect that the measurements (1) or (2) are performed three or more times

$$r_i = \frac{1}{N} \sum_{j=1}^{N} (r_i^j), \sigma_i = \sqrt{\frac{\sum_{j=1}^{N} (r_i^j - r_i)^2}{N-1}}, \quad (3)$$

where N is the number of repetitions, σ_i – the standard deviation. For each of r_i the error δ_i is estimated, which consists of the systematic error of the method and the random measurement error

$$\delta_i = \delta_i^{system} + \delta_i^{random}. \quad (4)$$

It must be emphasized that δ_i^{system} should be not measured from r_i, but estimated by evaluating the method φ_i.

It is assumed that for each r_i the confidence interval $\pm\epsilon_i$ and the confidence probability P are defined. Both of these parameters are also calculated based on the estimates of φ_i, i.e. based on a large number of samples. Since these tests are not equivalent to each other, the level of significance q_i should be determined. The example values of q_i are shown in section VI. In following we denote the set of $\{\Phi, R, \Delta, P, Q\}$ as the n-parametric measurement model.

In order to compare the test results with each other, it is necessary to put these results on a scale, to define the origin of the scale and to select the unit of measurement. This scale should be also consistent with some other related scales, e.g. [105]. As previously mentioned, synthetic scales are often used for complex mutiparameteric models. A simple scale can be given by

$$\zeta = \frac{1}{N} \sum_{i}^{N} k_i r_i, \quad (5)$$

where k_i are weight coefficients.

As already noted, all tests Φ are calibrated in % in relation to a 'normal' (non-impacted) process. The stronger the 'high-penetrating' emission deviates a normal process, the higher is the value of ζ. *Therefore, this scale is a measure of how much a process is deviated by the influence of a 'high-penetrating' emission from its normal course.* In various thematic groups different names for these scales are proposed. We propose a neutral name – the Relative Impact Unit (RIU).

The zero value of ζ corresponds to zero values of r_i and, consequently, the absence of changes in the experimental tests, i.e. the absence of the emission. Coefficients k_i serve as weighting factors when calculating the final value ζ and *de facto* are calibrated with respect to some emitting device with fixed parameters such as frequency, spectrum, intensity, etc. Since a large number of experiments have been conducted with the LED generator, which confirmed its effectiveness, and this device is available on the market (as well as can be built by hobbyists), k_i are calibrated with respect to the LED generator. Alternatively, as a calibration source, the usage of rotating objects, such as a disk of a certain mass, diameter and rotational speed, can be proposed.

The impact of the 'high-penetrating emission' can be both stimulating and inhibiting (from biological point of view), however most of the technological sensors are unable to measure this feature. Therefore, the value of ζ in the expression (5) is a positive value. To assess the stimulatory or inhibitory factor, results of chemical (e.g. [19]) and biological tests can be mentioned additionally.

A. *Reproducibility of results*

Authors in [70] noted that the emission from generators cannot be detected in 25%-30% of all cases. In [15], [106] it is shown that a response from only 45% to 50% of EDL sensors is obtained by a parallel registration with 9 sensors. In other words, only 4-5 different sensors responded to the impact. The work done by [25] describes nonlocal multi-day experiments, where on some days the sensors showed no reaction whereas during all other days the response was significant. The paper [107] demonstrates that in average 30%-35% of solid-state sensors have shown no reaction on the impact. A majority of serious researchers noted a similar phenomenon of 'unpredictable reproducibility' of experimental results.

For critics this fact leads to the conclusion that the 'high-penetrating' emission is missing and sensors record some fluctuations, which accidentally coincide with the time of experiment. However, we repeat two hypotheses expressed in [92] and [25], that:

- used generators are not a single source of 'high-penetrating' emission in experiments. These emission sources might interact with each other.
- one or more other factors can be involved in the transmission mechanism from generators to sensors, whose impact is not yet understood. For example, a signal transmission can be interrupted by some astronomical events [25]. This effect is similar to an impact of solar activity on the radio transmission. The papers [6], [7], [29], [53] demonstrate also the influence of 'aftereffect' on different sensors and degradation of sensors during repetitive long-term measurements.

Therefore, we propose the following measurement approach. Generators and sensors are activated for a period of 24 hours with 1 hour exposure and 3 hours pause. In other words, there are 6 influences of 1 hour duration. From those three experiments, those with the best results are selected. For analysis, we record data 3 hours before exposure, one hour exposure and 3 hours after exposure - in total a time window of 7 hours. The experiment is considered as positive if sensors showed a response during 60 minutes of exposure (i.e. impacts outside of the 60-minute-window are ignored). If during 24 hours less than 3 positive results are received, the residual experiments are evaluated as negative. For example, if only two positive results are obtained, we add one negative result. For these results a statistical significance is calculated, for example, by using the Mann-Whitney U-test or the chi-square test, with respect to a zero hypothesis regarding a random nature of the obtained results, see examples in [15], [25], [106].

V. Example of tests

In this section we demonstrate an application of the proposed approach to the LED generator. This choice is primarily motivated by a large number of results obtained for this emitting device during more than 10 years of research. In these tests, we indicate only an estimation of errors, reduced to the accuracy class of measuring instruments, i.e. the normalized error such as 0.01%, 0.1%, 1%, 1.5% etc. It serves mainly for a qualitative comparison of accuracy between different methods. For a more accurate calculation of errors and statistical analysis it is necessary to refer to the original works. This is also related to the confidence probability, whose calculation has not been carried out due to a small number of accumulated data in several tests.

A. *Description of the LED generator*

Influence of the spectral LED light on biological organisms is well known, see e.g. [108]. In the literature there are known works about reactions of cellular metabolism on different light spectra [109], IR [110], red and blue spectra [111], blue and green spectra [112] as well as combinations of different types of LED emission [109]. Technical recommendations for plant research [113] were developed, different emitters and spectra for physiotherapy [114] were examined. Research was also conducted to explore the impact of LED light on tissue of animals, in particular, rats [115], [116]. Some studies reported on the impact of LED emission on a cognitive ability of computer users [117].

LEDs can operate in a specific mode of high-forward-voltage/supershort-activation-pulses with a high pulse current (hundreds of amps for the LED generator). It was demonstrated that, in addition to electromagnetic emission, LEDs emit in this mode also a 'high-penetrating' component [17], [118], [119], [15], [106], [120]. This effect was discovered in 1997 by A.V.Bobrov first for the laser-, and then for the LED-light. At present there are LED generators developed by Bobrov and by Kernbach, see Figure 1 (both generators are also replicated by a number of hobbyists). Despite different designs (Bobrov's generators use analog elements to activate LEDs, the Kernbach's generators use digital components), both versions utilize the same effect. In this paper, both devices will be denoted as the 'LED generator'. Design details

(a) (b)

Figure 1. LED generators: **(a)** developed by A.V.Bobrov, **(b)** developed by S.Kernbach.

of these devices are described in [15] and [121]. The metrological tests are conducted for the LED generator with four emission spectra: 470nm (LED C503B-BAS-CY0C0462, 11000 mcd), 527nm (LED C503B-GAN-CB0F0792, 34000 mcd), 594nm (LED TLCY5800, 24000 mcd), 620nm (LED TLCR5800, 35000 mcd). Primary and secondary modulations are 6kHz and 8Hz.

B. Suppression of accompanying interactions

For metrological tests it is necessary to extract 'high-penetrating' components from many electromagnetic, thermal, mechanical and other interactions. An example of suppressing EM fields in the macro- and micro- biological tests is shown in Figure 2. Here, either the LED generator or biological samples are placed in thick-wall grounded metal containers. In other tests, see [25], [121], not only

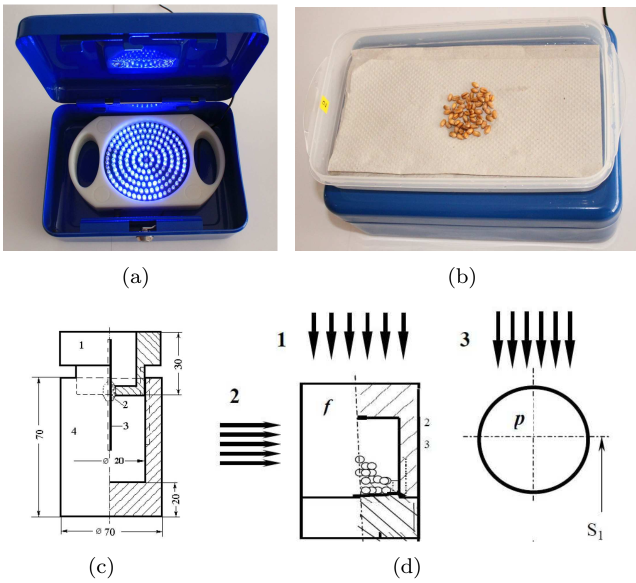


Figure 2. Suppression of accompanying EM fields in experiments **(a,b)** of wheat germination and **(c,d)** CO_2 emission of yeast.

EM, but also thermal, mechanical and acoustic impact factors are carefully isolated. In those experiments, data from several temperature sensors, accelerometers and sensors of EM fields are recorded. Since to suppress an environmental thermal impact is hardly possible, the dynamics of all measured data was split into two components: fast changes in the range of 30-60 minutes, for which the measured factor of 'high-penetrating' emission was in charge and slow changes within 180-240 minutes, for which the temperature fluctuations are responsible.

C. Test φ_1: macrobiological test

For macro-biological tests the biological morphogenetic processes during germination of seeds are selected. This test is a widely used method for analyzing various impacts, see e.g. [122], [123]. Germination of wheat was evaluated at $t = 144 - 160$ hours as the ratio of the experiment – the impact of generator with penicillin filter enclosed in a grounded metal container – to control attempts. Penicillin filter was included in the test, because a large number of results in local and nonlocal experiments [55], [124] was obtained for this filter. Number of grains in each container - 200 pcs, the test was repeated 3 times. The following results were obtained for the control attempts – 94%, 82%, 88% and for the experiment 98%, 96%, 93%, respectively, see an example in Figure 3. Thus, we obtained

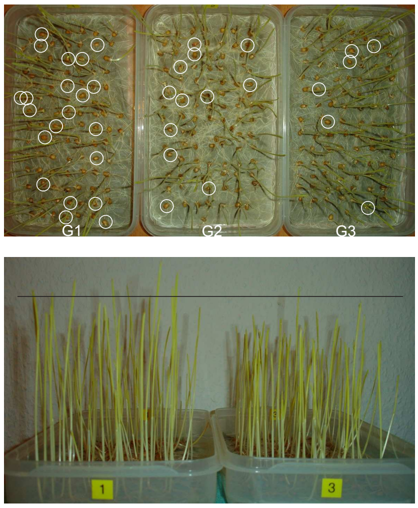
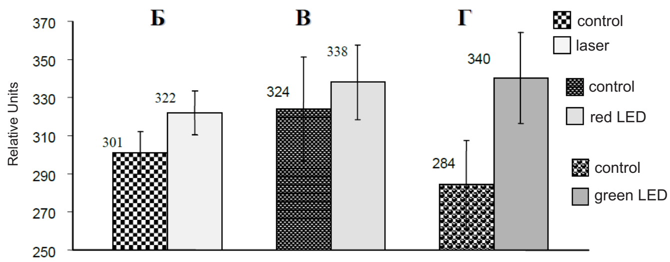


Figure 3. Example of a macro-biological test with the germination of wheat. The containers G1 is the control attempt, G2, G3 are different experimental containers. Each container contains 200 grains. Round labels mark not-germinated-seeds. Data from the work [124].

$r_1 = 9.0034\%$ and the standard deviation $\sigma = 7.0248$ for this test. The systematic error of this test depends on several factors: (a) keeping equal temperature, light and humidity conditions, electromagnetic fields and other influences for control and experimental containers; (b) the type of pre-treatment (e.g. co-soaking of seeds), which are used for the control and the experiment; (c) a variation of germination, which depends on a season, interactions (e.g. electrochemical) between seeds during germination, a quality of seed material, etc. When using a thermostat and a large sample size (the number of seeds for analysis), we estimate the error for (a, b) in the area of $< 1.5\%$. The errors for (c) are difficult to estimate, we leave this issue open. The random error depends on the number of seeds, the random measurement error for 200 seeds in a container is less than 0.5% (see more in [55]).

D. Test φ_2: microbiological test

In this section we refer to the work [121], which presents data obtained with the Bobrov's generator. After calibrating the experimental setup, we expect similar data also for the Kernbach's generator. We refer to [121] who states that: 'The experiments were performed on dry yeast. Cell activity was measured by the amount of produced gas in the population by recording the indicator of zymase activity (ISA). Efficiency was determined on results of a series of ten or more experiments, each of which were impacted in the same way. The control group was not exposed to the emission. The duration of each experiment was determined by the average value of ISA in control populations: the experiment ended after reaching values of 280 - 300 units (divisions of a scale). The effectiveness was defined by comparing the average (based on the entire series) values of ISA in experimental populations with the average value in the control group. Mean values were determined by averaging the ISA values measured in corresponding populations in all experiments. In each series of experiments, the number of samples – to draw conclusions about effectiveness of a particular impact – ranged from 30 to 120 numbers'. Figure 4 shows a diagram from that work. For further analysis, we choose



(a)

Figure 4. Indicators of zymase activity of yeast under the influence of laser and light-emitting diodes, EM shield – 25mm thick steel, the exposure - 88 sec, data from [121].

the first three indicators for LEDs published in that work: the control – 307, 324, 284 and the experiment – 330, 338, 340, respectively. The mean is $r = 10.5103\%$ with the standard deviation $\sigma = 8.1303$. The estimation of errors was not done in the paper [121]. From our point of view, the systematic error also depends on environmental conditions, similarly to the macro-biological test, and can also be accepted at $< 1.5\%$. Random error is dependent on the accuracy of the weighing the yeast, sugar, water, and accuracy of measuring CO_2. By using the exact weights of the class '1 mg' the random measurement error is less than 0.5%.

E. Test φ_3: solid-state sensors

In the literature we can find a number of reports about semiconductor [86], [125], [126], capacitor [127], resistor [28], inductive and quartz sensors, as well as devices based on them [70], [93], [128]. The solid-state sensors are well suitable for mobile and handheld sensing devices, however they have essential disadvantages such as a small variation of measured parameters and relatively high temperature coefficients (high dependence on temperature). Sensing devices based on solid-state sensors often use unique design solutions to overcome these difficulties.

We used for this test an inductive version of the conductometric sensor[7] [59]. There are two independent LC Colpitts oscillator with a high frequency (up to 1 GHz) transistor. Oscillators are tuned to the frequencies between 10MHz and 30MHz. Analog parts are shielded and implemented as separate modules, the digital part is implemented with PSoC 5 CY8C5588AXI-060 chip with a clock frequency of 75 MHz (stabilized by a crystal oscillator).The analog part is covered by the structural amplifier, made from a set of hollow cones. Due to this technical solution, sensor elements are ceramic capacitors with the dielectric Y5V, a semiconductor material of the high-frequency transistor and a special design of the inductance. Sensor responses to an impact of the 'high-penetrating' emission by changing the frequency. The digital part performs the functions of frequency meter, analog-to-digital converter for temperature sensors and supports USB interface. The circuit can operate in a differential mode or as two different sensors. Since the sensor has only a small non-linearity at small temperature changes, the expected frequency is estimated by a linear extrapolation of dynamics.

The Figure 5 shows the results of tests with the reaction of inductive sensors on the LED generator. Expected frequencies are 24.24561MHz, 24.24573MHz,

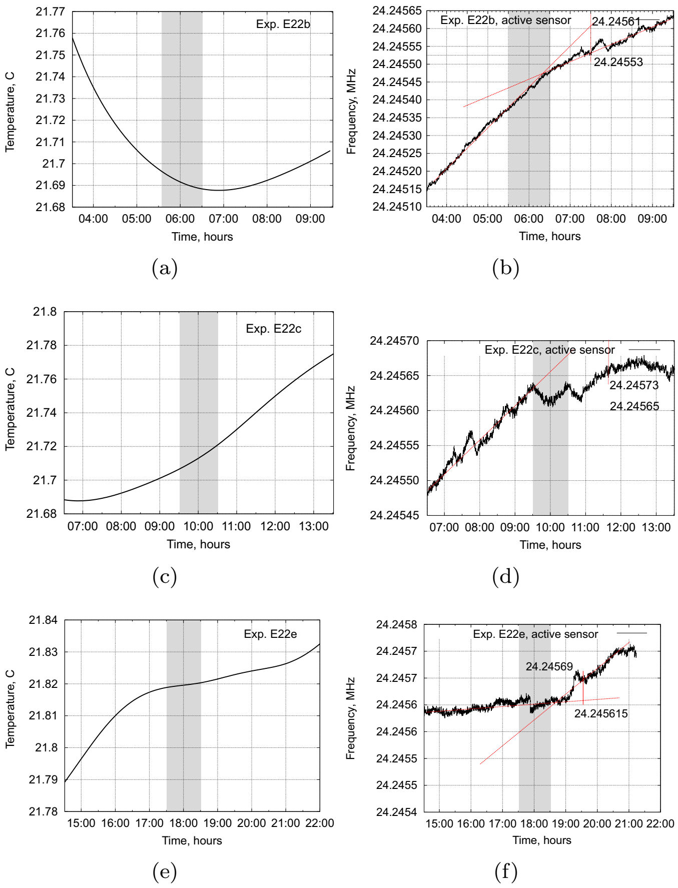


Figure 5. Response of the inductive sensor on the impact of the LED generator. Gray line shows the impact time, the distance between the generator and sensors is about 0.4 meter; **(a, b)** Changes of temperature during the experiment; **(a, d)** Changes the frequency during the experiment, data from [59].

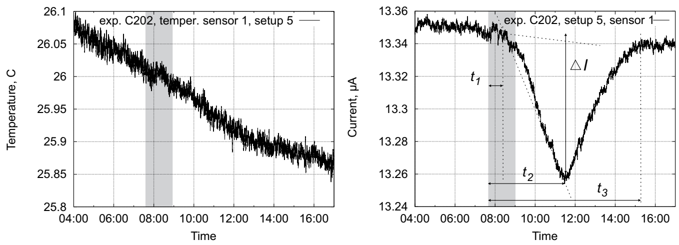
[7] Despite this sensor is not 'classically' solid, its characteristics are close to this class of devices.

24.24569MHz, measured frequencies are 24.24553MHz, 24.24565MHz, 24.245615MHz respectively. The average deviation of the frequency is $r = 3.2308 \cdot 10^{-4}\%$, the standard deviation $\sigma = 1.1906 \cdot 10^{-5}$. The systematic error of this method depends on two factors: (a) the quality of the temperature insulation and (b) conversion efficiency of the 'high-penetrating' emission into electrical parameters. Since a large statistics for factor (b) does not exist, we can estimate this error at $< 1\%$ based on repeated measurements. The random measurement error for the PSoC 5 chip is low, about 0.01%.

F. Test φ_4: deeply-polarized electrodes based on EDL

Tests on the reaction of deeply-polarized electrodes (EDL sensors) were conducted many times and described in [15], [118], [119], [17]. Sensors based on deeply-polarized electrodes are very sensitive conductivity-measuring-circuits with two- or four- electrodes operating at a constant current. Electrodes made from platinum or steel are immersed in a bi-distilled water. The digital part of the chip uses the PSoC 5 CY8C5588AXI-060 with 20-bit delta-sigma ADC. This chip is also used to collect data from sensors and to support USB interface. Changes caused by the 'high-penetrating' emission are detected as changes of DC current.

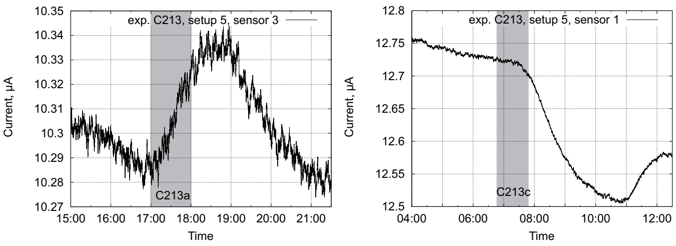
Analysis can be performed for signals, published in [106]. Sensor response to the LED generator is shown in Figure 6. Typical reaction of the sensors are the response time t_2



(a) (b)

Figure 6. Reaction of EDL sensors on the impact of the LED generator. Gray line shows the impact time, the distance between the generators and sensors is 0.5 ± 0.15 m; **(a)** Temperature changes during the experiment C202; **(b)** Changes of the current sensor during the experiment C202, data from [106].

and the current deviation ΔI from its expected value for a fixed time interval. This relationship can be used to assess the performance. For example, for an interval $t_2 = 120$ min. we received the expected $I = 13.341\mu A$ and the actual $I = 13.258\mu A$. The Figure 7 shows two other sets of sensor data from the experiment C213 (data from the work [106]). For further analysis, we can take the expected value of $I = 13.341\mu A$, $I = 10.275\mu A$, $I = 12.7\mu A$ and the measured values of $I = 13.258\mu A$, $I = 10.34\mu A$, $I = 12.5\mu A$. This corresponds to $r = 0.9528\%$ and the standard deviation $\sigma = 0.5604$. The measurement error consists of several factors: the systematic error of measuring small currents ΔI, caused by temperature



(a) (b)

Figure 7. Response of EDL sensors on the impact of the LED generator. Gray line indicates the impact time, the distance between the generators and sensors is 1.3 ± 0.15m; **(a,b)** Changes of current from two sensors S5S3 and S5S1 during the experiment C213, data from [106].

fluctuations during t_2 (they can be estimated by the level of temperature fluctuations), and the random errors caused by other factors (e.g. mechanical impacts). In general, we can estimate the systematic error at the level of $< 0.5\%$, and the random error at the level of 0.1%.

G. Test φ_5: statistical properties of random processes

Experiments with probabilistic events are well-known. One of the first of such experiments is reported by L.E.Rhine and J.B.Rhine related to impacting outcome of the dice by an operator [129]. It also needs to mentionthe works [44], [130], [131] about experiments with the random number generators (RNG). This work began in the 80s [48] and conducted on a set of random event generators (even including mechanical ones [132]). For example, in [133] authors point to a worldwide network of RNG devices and relationship with anomalies and events such as September 11 (2001), the World Cup, local holidays [134] etc. There are also papers, which describe a relationship between emotional states of an operator and the anomalies of RNG [45] as well as about joint biological/RNG experiments [135]. The work [101] shows RNG used in the spin-torsion experiments.

There are several methods of assessing data from RNG. For example, the authors in [91], [135] use the accumulation of deviations, both in time and in different RNGs. This approach is based on the well-known assertion that the value of

$$\sum_{i=1}^{N} Z^2 = \sum_{i=1}^{N} \left(\frac{x_i - \overline{x}}{s} \right)^2, \qquad (6)$$

has a χ^2 distribution with n degrees of freedom, where $\overline{x}$ is the expected mean value, s – the standard deviation. For each value of x_i, obtained from RNG, the values $z = \frac{x_i - \overline{x}}{s}$ are calculated, which are summarized for each hour $z_H = \frac{\sum z_i}{\sqrt{N}}$, where $i = 1...3600$, $N = 3600$. For each of z_H the value $\chi^2_{ij} = \sum z^2_{Hij}$ are summarized, where the i index takes values of hours (or the duration of the experiment , 1 ... end of the experiment) and the index j indicates the number of RNG (authors in [135] used three different RNG). Results are normalized as

$z_{i,j} = \sqrt{\chi^2_{ij} \times 2} - \sqrt{i \times 2 - 1}$ (see the work [136, p.517]). The cumulative function, combining z_{ij} by using 'inverse normal method' [137, p.39] $z_{cd(i)} = \sum_{ij} z_{ij}/\sqrt{3}$ for three RNG ($j = 1...3$) is plotted as a function of the hour i. For the confidence levels of 0.95 and 0.99 the critical values of z are in the range (-1.645 — +1.645) and (-2.33 — +2.33) for the errors of the first kind (z_α) and (-1.96 — +1.96) and (-2.575 - +2.575) for the error of the second kind ($z_{\alpha/2}$) respectively (see [138, p.303]).

For this test we developed a special device, which utilizes two semiconductor noise sources – Zener diodes operating in the avalanche mode. Feature of this circuit is its capability to analyze the analog noised signal obtained directly from diodes (i.e. without a simple interval-based conversion to '1'/'0'). This significantly raises the sensitivity of this device. Analog-to-digital conversion and pre-processing of digitalized signals occurs on the microcontroller ATMega328P. Received data – about 1000 samples per second – are sent via USB to the computer for further statistical processing. Due to a large amount of data this sensor requires a significant amount of computational resources. Like in the case of solid-state sensors, the analog part is located close to the structural amplifier.The sensor can be operated as a differential sensor or as two independent sensors. The output of this sensor is the calculated value of z, characterizing statistical parameters of the noise. Without impact of the LED generator, the value of z is within -1.645 — +1.645 and -2.33 — +2.33 for different confidence levels. When the LED generator exposes the RNG sensor, the value of z goes beyond those critical boundaries.

The Figure 8 shows results of an experiment with the LED generator and the semiconductor RNG, data from [107]. To evaluate the impact, we can choose a relation between the maximum of z, obtained during the experiment ($z = -2.236305$, $z = -2.514232$, $z = -2.383765$) and the significant value $z_{0.95} = -1.6545$ for further analysis, i.e. $z_{0.95}$ is the expected value. This corresponds to $r = 43.7353\%$ and $\sigma = 8.4043$. Since the analysis is based on a very large amount of data — $10^7 - 10^9$ samples — thus the systematic and random errors of this method are very low and can be taken as $< 0.01\%$.

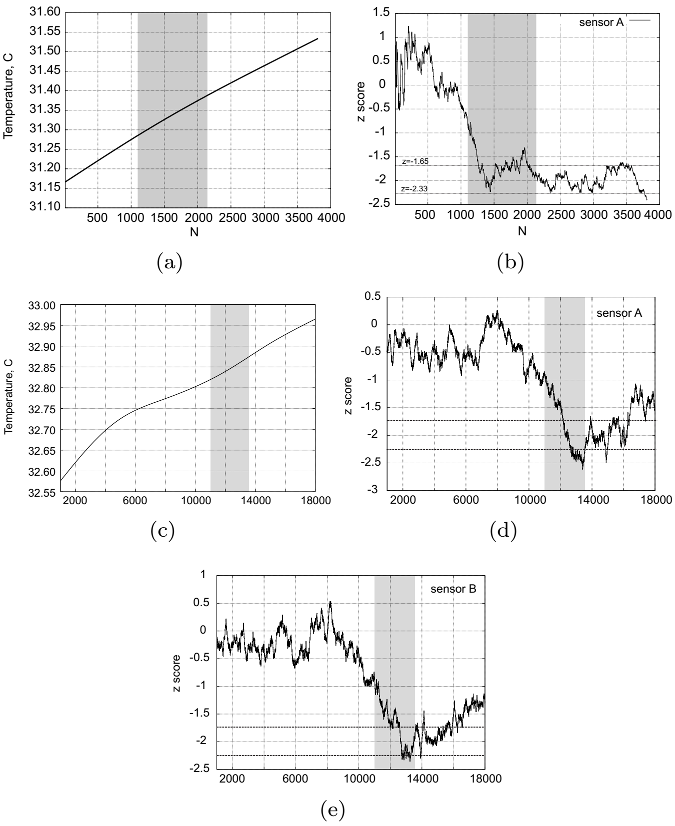


Figure 8. Impact of the LED generator on the semiconductor RNG. Gray line indicates the impact time of the generator, the distance between the generator and the sensor 0.4 meter; **(a, c)** Changes of temperature during the experiment; **(b, d, e)** Changes of the cumulative value z, calculation is based on (6), see the text. The significant values of $z = -1.65$ and $z = -2.33$ are shown, data from [107].

H. Test φ_6: phase transitions

Tests based on the phase transitions can be performed with different materials, taking a liquid form. The most convenient materials are water or liquid polymers. Very interesting material for this test is represented by the homogenate of green leaf [79]. Molten metals, despite a large number of published results, e.g. [78], can hardly be used in conditions of most testing labs.

There are known experiments with the evaporation and freezing of water. Authors in [139] evaporated aqueous copper sulfate solution at a room temperature. A relationship was established between the frequency of the generator and the crystal size. Evaporation of water and analysis of the crystals was also performed in [74]. In [140] the kinetic curves of isothermal water evaporation are analyzed. In the papers [75], [76] authors visually analyzed crystals obtained by freezing the water. However, in all these studies, in addition to demonstrating the effect, they also experienced difficulty obtaining quantitative data for numerical analysis.

To obtain quantitative data we can analyze dynamics of the ice-building and some properties of plastics, polymerized under the 'high-penetrating' emission [77]. The freezing of water depends on many factors, for example, the water activity [141], the presence of solid-phase-nuclei (ice nucleation) and other factors. Moreover, the dynamics of freezing involves several phases, which are used in many devices, such as the water purification systems [142]. For analysis and modelling of ice-building, the spin quantum mechanical concepts are also involved [143].

Currently phase-transition tests with water and polymers are under development and therefore are not included in this review. In the future, as quantitative results are obtained, the set of metrological tests will be updated.

I. Test φ_7: the 'aftereffect'

The 'aftereffect', also known as the 'phantom effect' [62], [144], [1], [6], [7], [145], [33], [29], [80] manifests by appearing with some 'spatial or functional' structures, produced by generators and continue to be present even after switching off these generators. These structures are measured by devices such as the IGA-1, inductive, EDL or solid-state sensors. An open discussion exists about whether these effects can be attributed to a 'high penetrating' emission, or to other, e.g. electrostatic, interactions. In several experiments, the laboratory was cleaned to remove possible electrostatic charges after removing generators, however, it seems the 'aftereffect' is still remained. Following arguments from the above-cited references, we currently tend to assign this effect to the 'high penetrating' emission (although several issues are still remained open).

'Aftereffect' tests for the LED generator have been performed several times by different groups of experts and are published in [102], [103]. To assess the effect in all those cases, we used the device IGA-1, the tests were conducted with the Bobrov's and Kernbach's generators, see Figure 9. These tests were carried out in a similar way: (1) the measurements of spatial environment around the generators before switching on these generators were performed, (2) the generators were switched on for a time from several hours to several days – at this point a second series of measurement data were collected, (3) the generators were switched off and the third series of measurements were performed. Comparing the results from all measurements, we came to the conclusion about the existence/non-existence of the 'aftereffect', that being,– the existence of spatial structures, which did not exist before the experiments, appeared during the operation of generators and existed several hours after switching off and removing the generators.

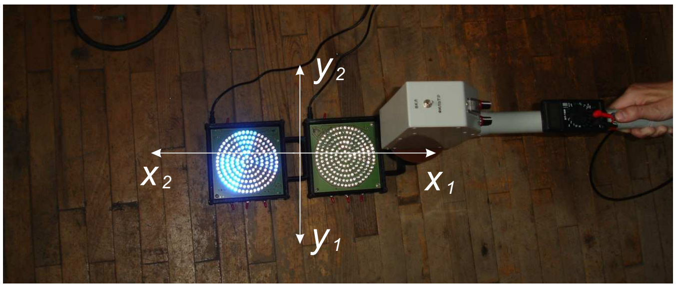


Figure 9. Test of the 'aftereffect' for the LED generator. Axes x_1, x_2, y_1, y_2 show the movement of the operator's hand with the device IGA-1 , image from [103].

The 'aftereffect' can be measured quantitatively, for example, by the existence time of spatial structures, or qualitatively, by the fact of their existence. Since properties of this effect are largely unknown, we will only use the qualitative approach. Three positive results of the 'aftereffect' test, produced by the LED generator and measured by three groups of independent experts, will be used in further analysis. Due to a qualitative assessment, the errors of this method are not calculated.

J. Test φ_8: the non-locality effect

The non-locality effect means a kind of macroscopic entanglement [35], [36], when parts of a system are correlated with each other despite a considerable distance between them. The effect of the microscopic quantum entanglement is used in so-called quantum computers. The effect of macroscopic entanglement is currently in the research and can potentially be used for communication over long distances [104], [93], [128], [16].

The experiments were carried out on the signal transmission over long distances, as described in [25], [16], [55]. The distance between the transmitter and receiver varied between 1.5 and 50 meters for short distances and 1.65 and 13800km for long distances. In those experiments, the EDL and biological sensors are used. Generally over 200 tests have been performed. As an example, data from the experiment C235-C236 — the distance of 1.65 km between the LED generators and EDL sensors – are shown in Figure 10. The LED generators worked for 24 hours with the period of 4 hours. Sensors demonstrate a distinct modulation of the received signal with the period of 4 hours.

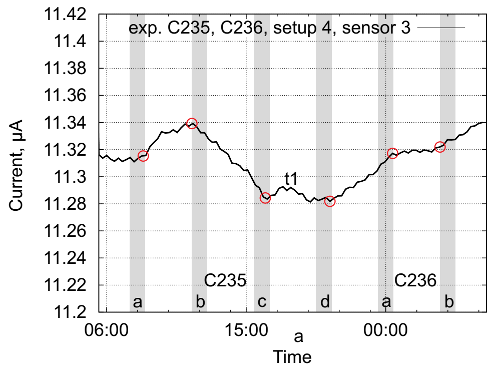


Figure 10. Experiments C235-C236 at the distance of 1.65 km between the LED generators and EDL sensors. Gray lines show the impact time of the LED generator. Modulation of the received signal is clearly visible, data from [25].

The results of this test can also be assessed qualitatively or quantitatively. Since the properties of this effect are also not yet fully understood, we will use only qualitative results such as 'yes' – 'no'. The non-locality tests of the LED generator can be evaluated as positive, and three positive results can be used for further analysis (without estimating errors).

VI. Analysis of results

Data from all tests are summarized in Table II. Since all results r_i are between 10^{-4} and 10^2 , it is necessary to represent all values on the same scale, such as 10^2, by appropriate weighting coefficients k_i. This approach is consistent with the level of significance equal to $q_i = 1$ for all tests. Applying the expression (5), we obtain the

Table II
Results of metrological test results for the LED generator and its evaluation in the RIU scale.

Test	Result r_i, mean, %	Standard deviation σ	Number of replications N	Systematic error δ^{system}	Random error δ^{random}	Weight coeff. k_i
φ_1: macrobiologic test	9.0034	7.0248	3	$< 1.5\%$	0.5%	10
φ_2: microbiologic test	10.5103	8.1303	3	$< 1.5\%$	0.5%	10
φ_3: solid-state sensors	$3.2308 \cdot 10^{-4}$	$1.1906 \cdot 10^{-5}$	3	$< 1\%$	0.01%	10^5
φ_4: deeply-polarized electrodes	0.9528	0.5604	3	$< 0.5\%$	0.01%	100
φ_5: test on statistic properties	43.7353	8.4043	3	$< 0.01\%$	0.01%	1
φ_6: phase transitions	—	—	—	—	—	—
φ_7: the 'aftereffect'	3	—	3	—	—	10
φ_8: the non-locality effect	3	—	3	—	—	10
	$\zeta = 56.7703$					

value of $\zeta = 56.7703$. This value is an efficiency indicator of the LED generator in the RIU scale. Both biological tests showed a stimulating effect of the LED generator. Some studies compared the impact of the LED generator and psychically-gifted individuals on technological and biological sensors [55], [57], [25]. Based on a subjective evaluation of operators involved in these tests, it has been estimated that the effect of the LED generator and psychics was qualitatively 'similar'.

Analyzing errors of different tests it can be assumed that the systematic error can be minimized by averaging the results between the tests. For example, results of some tests can be used to estimate the expected parameters of other tests and thus to reduce the overall uncertainty. According to the errors-addition-rule, however, we expect the overall random error at 1%.

Comparing the results for the LED generator with other generators, we can relate this device to the 'middle-range-efficiently' emitters. It's primary use consists in performing small laboratory experiments, devices of individual/non-drug therapy in medical practice, various work with the stimulation of plants, etc. – i.e. where a large 'emission intensity' can be harmful. Structure and production (re-production) of this device is not complex and basically it uses the same circuits, thus we can consider this emitting device as a calibrating instrument for other generators. This idea was also expressed by A.V.Bobrov. Since the weights k_i are chosen in relation to the LED generator, *de facto* we will use this approach for further tests.

VII. Conclusion and some open questions

In this paper we briefly surveyed various methods for detecting the 'high-penetrating' emission. The issue of detection and measurement is vital for this area of research, wherein the emission is hard to register with usual instruments. This work represents the second part of the review, devoted to the issue of 'high-penetrating' emission. The first part was published in [12] and considers historical aspects of Soviet research, the third part will appear in [146] and is devoted to Western research of the 'high-penetrating' emission.

Author of this work tried to consider the 'high penetrating' emission as widely as possible, without drift toward one or another theory. Rapid tests for characterization of this emission are proposed. It should be noted that we deliberately skipped complex chemical and bio-physical tests, which require special and expensive equipment. The proposed method uses widely available materials and components, and can therefore be carried out, firstly, by persons having basic laboratory skills and, secondly, at various locations. It only needs to keep a certain standard of conducting experiments and processing results.

This technique can also be used to assess the PID effect [61], [101]. As previously mentioned, the impact of the LED generator is in many cases similar to the impact of human operators, i.e. the fact and intensity of 'bioenergetic' impact can also be evaluated by this method. Since works on the sensor improvement is an on-going process, the set of metrological tests can be changed during the preparation of a standard.

In conclusion, we would like to point out some open questions that require further research and technological development.

1) In the conducted tests, the effect of temperature was minimized to the level of 10^{-2}C, EM to 10^{-6}T and 10^{-3}V/m. Minimal changes of the measured parameters occurred between 10^{-5} and 10^{-7}. In other words, the measurement errors are in some cases at the level of the suppressed local environmental factors. Numerous experiments were conducted to show that changes attributed to the 'high-penetrating' emission are not caused by thermal and EM factors, see e.g. [15]. When performing experiments, it needs to pay a close attention to a qualitative suppression of these factors. We propose to always publish the data from temperature measurements during experiments, since the temperature changes represent often the source of sensor reaction.

2) At the moment we cannot say with certainty whether passive generators (shape effects, activated polymers), rotating, LED and EM generators based on the Aharonov-Bohm effect produce the same physical effect. It is possible that some of these emitting devices will not show some of these phenomenological properties – for example, the 'aftereffect' or the non-local phenomena. Currently we are performing these tests for passive generators, such as in [84].

3) The 'high penetrating' emission has a stimulating or inhibiting effect on biological systems. These types of polarization are sometimes referred to as 'right-handed or left-handed polarization', 'increasing or decreasing entropy', etc. These types of polarization can be reliably detected by biological sensors, but corresponding technical sensors are still in development. There are recorded observations when stimulating or inhibiting effects were reversed by some reason. Therefore, we urge to be cautious about using these concepts in metrological tests because they concern phenomena, which are not-yet-understood.

4) Sometimes such terms as the 'emission intensity' or 'energy efficiency' cannot be applied to the 'high penetrating' emission. For example, in [16] the emission intensity of the LED generator was decreased by disabling the half of emitting LED fields. However, it did not significantly affect the quality of the received signal by EDL sensors. The paper [25] describes the experiment, when the signal was detected at the distance of 13800km and the transmitted optical power (the fibre glass transmitter) was approximately 1 mW. Therefore, metrological tests should first assess the effectiveness of the impact, despite it produced by low power generators (measured, for example, in electric power consumption).

5) The role of so-called 'operator effect' – influence of an operator on experimental results – is not yet fully clear. Several double-blind experiments have been performed, e.g. [26], which indicated an operator-independent character of the system 'generator→sensors' based on the 'high penetrating' emission. However, several other sources reported on decreasing or even blocking the impact in presence of some operators. Since the emission of the LED generators is to some extent similar to the 'operator-generated' emission, the hypothesis regarding a 'blocking impact' might take place. Consequences of this effect for metrology — provided the effect is valid — are unclear. More experiments in this regard should be performed.

6) Further works along this line should be focused on introducing an absolute scale and also means of universal calibration, for example, the use of standardized rotating masses. It is also necessary to develop the theoretical foundation of such an absolute scale.

VIII. Acknowledgment

Author would like to thank the group 'Second physics' and Association of Unconventional Science for fruitful discussions. Especial thanks are expressed to A.V.Bobrov and V.A.Zhigalov for multiple comments improving this work.

References (Original Language)

[1] А.В. Жигалов. *Характерные эффекты неэлектромагнитного излучения.* Интернет публикация, 2011.
[2] Г.И. Шипов. *Теория физического вакуума.* Москва, НТ-центр, 1993.
[3] А.В. Жигалов. *Уничтожение торсионных исследований в России.* Интернет публикация, 2009.
[4] В.А.Эткин. Детекторы энергоинформационных взаимодействий. *Самиздат*, 2008.
[5] Е.А.Акимов and Г.И. Шипов. Торсионные поля и их экспериментальные проявления. *Препринт, Международный институт теоретической и прикладной физики РАЕН*, (4), 1995.
[6] И.А. Мельник. *Осознание 5й силы.* Москва, Фолиум, 2010.
[7] В.И.Лунев. *Поисковые экспериментальные исследования в области спин-торсионных взаимодействий.* Томск, 1995.
[8] Valery A. Slaev, Anna G. Chunovkina, and Leonid A. Mironovsky. *Metrology and Theory of Measurement.* De Gruyter, 2013.
[9] OIML. *International Recommendation OIML R 63, MPetroleum measurement tables.* International Organization Of Legal Metrology, 1994.
[10] Raghunath Nambiar and Meikel Poess. *Performance Evaluation and Benchmarkings.* Springer, 2009.
[11] David J Jackson and Edgar Borgatta. *Factor Analysis and Measurement in Sociological Research: A Multi-Dimensional Perspective.* SAGE Publications, 1981.
[12] S. Kernbach. Unconventional research in USSR and Russia: short overview. *arXiv 1312.1148*, 2013.
[13] Самохвалов В.Н. Экспериментальные доказательства существования массодинамических полей и сил. *Фундаментальные проблемы естествознания и техники. Труды Международного научного Конгресса*, 33:488–497, 2008.
[14] А.Е.Акимов. Эвристическое обсуждение проблемы поиска новых дальнодействий. EGS-концепции. *М., Препринт / Межотрасл. науч.-техн. центр венчур. нетрадиц. технологий; N 7A*, page 63, 1991.
[15] Serge Kernbach. Replication attempt: Measuring water conductivity with polarized electrodes. *Journal of Scientific Exploration*, 27(1):69–105, 2013.
[16] С. Кернбах. Исследование Проникающей Способности Светодиодного и Лазерного Излучения, ч.1, ч.2. *Нано- и микросистемная техника*, 6,7, 2013.
[17] А.В. Бобров. *Модельное Исследование Полевой Концепции Механизма Сознания (A.V. Bobrov, Investigating a field concept of consciousness).* Орел, ОрелГТУ, 2006.
[18] И.Н.Степанов. Излучение формы. Состояние проблемы. Обзор. *Интернет публикация, www.chronos.msu.ru/RREPORTS/stepanov_forma.pdf*, 2013.
[19] С.В. Мякин, И.В. Васильева, and А.В. Руденко. Исследование влияния формируемого пирамидой поля на материальные объекты. *Сознание и физическая реальность*, (7(2)):45–53, 2002.
[20] Dan A. Davidson. *Shape Power.* Rivas Pub, 1997.
[21] Ю.С.Потапов, П.П.Фоминский, and С.Ю.Потапов. *Энергия вращения.* Кишинев, 2001.
[22] В.Г.Краснобрыжев. Универсальная система квантовой телепортации. *Материалы I-й международной научно-практической конференции 'Торсионные поля и информационные взаимодействия'*, pages 486–499, 2009.
[23] Mark Krinker. Huygens-fresnel principle as a base for origination of spinning processes. *Материалы III-й международной научно-практической конференции 'Торсионные поля и информационные взаимодействия'*, pages 229–230, 2012.
[24] Mark Krinker. Spinning process based info-sensors. *Материалы III-й международной научно-практической конференции 'Торсионные поля и информационные взаимодействия'*, pages 223–228, 2012.
[25] Сергей Кернбах, Виталий Замша, and Юрий Кравченко. Дальние и Сверхдальные Приборные Взаимодействия. *Журнал Формирующихся Направлений Науки*, 1(1):24–42, 2013.
[26] С. Кернбах, В.Т.Шкатов, and В. Замша. Отчет о проведении экспериментов по сверхдальней связи с использованием цифрового отображения планеты Марс. *Журнал Формирующихся Направлений Науки*, 1(2), 2013.
[27] H. E. Puthoff. Communication method and apparatus with signals comprising scalar and vector potentials without electromagnetic fields. *Патент US5845220*, 1998.
[28] Н.А. Козырев. *Избранные труды.* Л.: Ленинградский Университет, 1991.

[29] Лавреньтьев М.М., Еганова И.А., Луцет М.К., and Фоминых С.Ф. О реакции вещества на внешний необратимый процесс. *Доклады АН СССР*, (317(3)):635–639, 1991.

[30] Y. Aharonov and D. Bohm. Significance of Electromagnetic Potentials in the Quantum Theory. *Physical Review Online Archive (Prola)*, 115(3):485–491, 1959.

[31] В.Н.Аносов and Э.М.Трухан. Новый подход к проблеме воздействия слабых магнитных полей на живые объекты. *Доклады Академии Наук: Биохимия, Биофизика и Молеклярная Биология*, (392):1–5, 2003.

[32] Ivan Rampl, Vladimír Boudný, Milan Cíž, Antonín Lojek, and Pavel Hyršl. Pulse vector magnetic potential and its influence on live cells. In *Proceedings of the 2009 International Conference on eHealth, Telemedicine, and Social Medicine*, ETELEMED '09, pages 99–107, Washington, DC, USA, 2009. IEEE Computer Society.

[33] А.В. Бобров. Взаимодействие спиновых полей – пятое фундаментальное взаимодействие, ч.1. *Журнал Формирующихся Направлений Науки*, 1(1):48–57, 2013.

[34] С.А.Истомин and Р.Н.Кузьмин. Спин-торсионные взаимодействия в магнетиках. *Вестник Моск. ун-та. Сер.3: Физика. Астрономия.*, (5):51–54, 1997.

[35] Vlatko Vedral. Quantifying entanglement in macroscopic systems. *Nature*, 453(7198):1004–1007, 2008.

[36] K. C. Lee, M. R. Sprague, B. J. Sussman, J. Nunn, N. K. Langford, X. M. Jin, T. Champion, P. Michelberger, K. F. Reim, D. England, D. Jaksch, and I. A. Walmsley. Entangling Macroscopic Diamonds at Room Temperature. *Science*, 334(6060):1253–1256, 2011.

[37] А.Ф.Охатрин. Микролептонная динамика и единое поле (Концептуальная Модель). *Специальная техника средств связи, Серия общетехническая*, (2-3):106–110, 1992.

[38] А.Ю.Смирнов. Дальние нелокальные взаимодействия могут определяться торсионными возбуждениями и волнами в виртуальной плазме физического вакуума (гипотезы, концептуальный и качественный анализ). *Материалы III-й международной научно-практической конференции 'Торсионные поля и информационные взаимодействия'*, pages 173–200, 2012.

[39] Л.Б.Болдырева. Эффект полостных структур. Модель сверхтекучего физического вакуума. *Материалы III-й международной научно-практической конференции 'Торсионные поля и информационные взаимодействия'*, pages 53–59, 2012.

[40] Вейник А.И. *Термодинамика реальных процессов.* Минск: "Навука i тэхнiка, 1991.

[41] Кобозев Н.И. *Исследование в области термодинамики процессов информации и мышления.* М. Изд. МГУ., 1971.

[42] С.Э.гШноль, Т.А.гЗенченко, К.И.гЗенченко, Э.В.гПожарский, В.А.гКоломбет, and А.А.гКонрадов. Закономерное изменение тонкой структуры статистических распределений как следствие космофизических причин. *Успехи Физических Наук*, (170(2)):214–218, 2000.

[43] Л.Е. Колодный. *Феномен 'Д' и другие.* М., Издательство политической литературы, 1991.

[44] J. Beloff and L. Evans. A radioactivity test of phycho-kinesis. *Journal of the Society for Psychical Research*, 1961.

[45] R.A. Blasband. The ordering of random events by emotional expression. *Journal of Scientific Exploration*, (14(2)):195–216, 2000.

[46] Remy Chauvin. A PK experiment with mice. *Journal of the Society for Psychical Research*, (53(804)):348–351, 1986.

[47] R.G. Jahn. The presistent paradox of psychic phenomena: An engeenereeng perspective. *Proceedings of IEEE*, (70(2)):136–170, 1982.

[48] Brenda J. Dunne and Robert G. Jahn. Consciousness and anomalous physical phenomena. *Technical Note PEAR 95004*, 1995.

[49] Edward W. Russell. *Report on Radionics.* Saffron Walden: The C. W. Daniel Company Limited, 1997.

[50] Tony Scofield. The radionic principle: Mind over matter. *Radionic Journal*, (52(1&2)):5–16 & 7–12, 2007.

[51] L.D. Leiter. The pathology of organized skepticism. *Journal of Scientific Exploration*, (16(1)):125–128, 2002.

[52] А.В. Бобров. Торсионный компонент электромагнитного излучения. Информационные торсионные поля в медицине и растениеводстве. *ВИНИТИ, 635-B98*, 1998.

[53] В.Т. Шкатов. Детектирование торсионных полей. *Интернет-публикация, Томск, www.trinitas.ru/rus/doc/0231/004a/02311037.htm*, 2010.

[54] Ю.Н. Чередниченко and Л.П. Михайлова. Эффекты формы и фазовые переходы первого рода: экспериментальное исследование дистантных взаимодействий на физических датчиках и клеточных биоиндикаторах. *Парапсихология и психофизика*, (2):67–73, 1999.

[55] S. Maslobrod, E. Maslobrod, and S. Kernbach. Long range interaction within the system 'semiconductor generator - matrix - seeds'. In *Proceedings of conference 'Bio-Energy-Information Interactions. Ecology and Safety'*, Moscow, 2013.

[56] S.N. Maslobrod, V.G.Karanfil, and S.Kernbach. Change of morphological parameters of seeds and sprout of wheat at a distant energoinformation impact on seeds and soil. In *Proceedings of XXII international symposium 'Protection of bio- noosphere. Eniology. Unconventional plant cultivation. Ecology and medicine'*, Alushta, 2013.

[57] С.Н. Маслоброд, С. Кернбах, and Е.С. Маслоброд. К вопросу о нелокальной связи в системе физических и биологических макрообъектов. *(готовится к публикации) Журнал Формирующихся Направлений Науки*, 1(–):–, 2013.

[58] В.А. Ацюковский. Обнаружение и нейтрализация геопатогенных излучений земли. *Материалы III-й международной научно-практической конференции 'Торсионные поля и информационные взаимодействия'*, pages 305–310, 2012.

[59] Serge Kernbach and Olga Kernbach. О влиянии геометрии структурных элементов на параметры высочастотной неконтактной кондуктометрии. *направлен для публикации*, pages —, 2013.

[60] Ю.В. Цзян Каньчжэн. Способ омоложения организма. *Патент RU2057808*, 1991.

[61] А.Ю. Смирнов. Концепция телепортации информации. *Интернет публикация, akimovae.com/en/product/koncepcija-teleportacii-informacii/.*

[62] Шкатов В.Т. Исследование возможности приборной установки силового фантома на подвижную плавающую платформу. *Торсионные поля и информационные взаимодействия - 2012, материалы конференции*, pages 126–131, 2012.

[63] R. Voll. *Die Messpunkte der EAV an Händen und Füssen.* ML-Verlag Uelzen, 1992.

[64] Roth Trude. Erdstrahlungentstörungsgerät. Patent DE3416156A1, 02.05.1984.

[65] Соколова В.А. *Первое экспериментальное подтверждение существования торсионных полей и перспективы их использования в народном хозяйстве.* Москва, 2002.

[66] Сергей Есиев. *Решение проблем обеспечения биологической безопасности населения при потреблении продовольствия на основе мониторинга и контроля электромагнитных характеристик и других свойств природы в регионах производящих продовольствие.* Интернет публикация, 2002.

[67] Ю.В.Ткачук, С.Д.Яремчук, and А.А.Федотов. Экспериментальное исследование воздействия вращающихся феррит-магнитных дисков на реакцию гидратации уксусного ангидрида. *Материалы II-й международной научно-практической конференции 'Торсионные поля и информационные взаимодействия'*, pages 106–110, 2010.

[68] А.Ю.Смирнов and О.В.Астахова. Частотная симметрия нестационарной флуоресценции растворов ЧСА. *Симпозиум 'Фундаментальные науки и альтернативная медицина'*, page 5, 1997.

[69] А.Ю.Смирнов and Л.Т.Белецкая. Воспроизводимые переодические ангармонические колебания коэффициента поляризации флуоресценции водных растворов сывороточного альбумина и триптофана и влияние на них постоянного магнитного поля. *Слабые и сверхслабые поля и излучения в биологии и медицине*, pages 94–95, 1997.

[70] Г.Н. Дульнев and А.П. Ипатов. *Исследования явлений энергоинформационного обмена: экспериментальные результаты.* ГИТМО, Санкт-Петербург, 1998.

[71] С.Н. Маслоброд. Эффект дальней связи между прорастающими семенами, возникающий при их контакте в период набухания (S. Maslobrod, Effect of a long range interaction appeared between germinating seeds. *Электронная об-*

работка материалов (Electronic processing of materials), 48(6):99–113, 2012.

[72] С.Н.Маслоброд, Е.С.Маслоброд, and О.М.Сидорова. Изменение состояния семян под влиянием воздействия физико-химического стресса на их фотографические изображения (S.Maslobrod, E.Maslobrod, O.Sidorova, Change of seeds' state under physico-chemical stress impacting thier images. *Материалы VIII Межд.Крымской конф. 'Космос и биосфера', Киев (Proceedings of the VIII Int. Conf. 'Kosmos and Biosphere')*, pages 151–153, 2009.

[73] S.N. Maslobrod. The distant effect of water on seeds outside a closed reservoir. *Surface Engineering and Applied Electrochemistry*, 47(4):378–383, 2011.

[74] А.Е.Акимов, М.В.Курик, and В.Я.Тарасенко. Влияние спинорного (торсионного) поля на процесс кристаллизации мицелярных структур. *Биотехнология*, (3):69, 1991.

[75] Masaru Emoto, Gail Hayssen, Takashige Kizu, and Dean Radin. Double-blind test of the effects of distant intention on water crystal formation explore. *Journal of Scientific Exploration*, (5):408–11, 2006.

[76] D. Radin, N. Lund, M. Emoto, and T. Kizu. Effects of distant intention on water crystal formation: A triple-blind replication. *Journal of Scientific Exploration*, (22 (4)):481–493, 2008.

[77] Ю.И.Белоносов. Эффект воздействия 'активированных' полимеров на биологические объекты или аномальные свойства 'активированных' полимеров. Обзор. *Интернет публикация www.veinik.ru/science/experiment/article/724.html*, 2007.

[78] А.В.Клюев, С.А.Курапов, В.Ф.Панов, В.В.Стрелков, Н.А.Кокарева, and А.Е.Бояршинов. Структура и механические свойства металла после обработки расплава в нестационарном электромагнитном поле волнового излучателя. *Металловедение, термическая обработка металлов*, (7 (649)):3–9, 2009.

[79] Радюк М.С. Эффект 'неоднородности пространства' в биологических и физических процессах. *Квантовая магия*, (3(4)):4141–4155, 2006.

[80] Радюк М.С. Фантомный эффект. *Квантовая магия*, (7(4)):4139–4143, 2010.

[81] А.Г.Пархомов. Управляемый Хаос. *Материалы I-й международной научно-практической конференции 'Торсионные поля и информационные взаимодействия'*, pages 259–265, 2009.

[82] J. Lyklema. *Fundamentals of Interface and Colloid Science*. Academic Press, 2005.

[83] M. L. Belaya, M. V. Feigel'man, and V. G. Levadnyii. Structural forces as a result of nonlocal water polarizability. *Langmuir*, 3(5):648–654, 1987.

[84] С.В.Зенин. Объективизация и механизм защитного действия устройств класса 'Vita'. *Медицина труда и промышленная экология*, (9), 2002.

[85] Н.И. Музалевская and А.В. Бобров. О возможной роли двойных электрических слоев в реакции биологических объектов на внешние воздействия (N.I. Muzalewskay, A.V. Bobrov, On a possible role of electrical double layer in reaction of biological objects on external influences). *Биофизика*, 33(4):725, 1988.

[86] А.А. Ащеулов, Ю.Б. Добровольский, and В.А. Безулик. Воздействие электрического и магнитного полей на параметры полупроводниковых приборов. *Технология и конструирование в электронной аппаратуре*, (1):33–35, 2000.

[87] Шаповалов А. Краткое сообщение. *Техника молодежи*, (6), 1978.

[88] В.А.Панчелюга. Детектор Смирнова: регистрация воздействий от удаленных астрофизических объектов. *Метафизика*, (2(4)):67–80, 2012.

[89] R. Janhn, B. Dunne, G. Bradish, Y. Dobyns, A. Lettieri, R. Nelson, J. Mischo, E. Boller, H. Boesch, D. Vaitl, J. Houtkooper, and B. Walter. Mind/machine interaction consortium: Portreg replication experiments. *Journal of Scientific Exploration*, (14(4)):499–555, 2000.

[90] J. Hagel and M. Tschapke. The local event detector (led). an experimental setup for an exploratory study of correlation between collective emotional events and random number sequences. *Proceeding of The Parapsychological Association Convention*, pages 379–388, 2004.

[91] D. Radin. Exploring relationships between random physical events and mass human attention: Asking for whom the bell tolls. *Journal of Scientific Exploration*, (16(4)):533–547, 2002.

[92] Serge Kernbach. On high-penetrating LEDs emission on short and middle ranges. In *Proc. of the Int. Conf. Torsion fields and Information Interactions*, pages 98–114. Moscow, 2012.

[93] В.П.Замша and В.Т.Шкатов. О возможном способе сверхдальней передачи аварийного сигнала в экстремальных и чрезвычайных ситуациях. *Сборник УГАТУ 'Безопасность' 2012*, page 128, 2012.

[94] Ю.П.Кравченко and Н.В.Калашченко. К вопросу о регистрации электромагнитного излучения человеческого организма в целях медицинской диагностики. *Парапсихология и Психофизика*, (4(16)):67–80, 1994.

[95] А.А.Андреев, В.А.Жигалов, Ю.П.Кравченко, and М.Кринкер. Что детектирует прибор ИГА-1 и его аналоги? Эффекты и гипотезы. *Материалы II-й международной научно-практической конференции 'Торсионные поля и информационные взаимодействия'*, pages 50–69, 2010.

[96] В.Г.Коротков. Метод газоразрядной визуализации (ГРВ) - новый научный инструмент для изучения ауры человека. *'От эффекта Кирлиан к биоэлектрографии', СПб, Изд.-во 'Ольга'*, pages 18–23, 1998.

[97] MSU and Виталий Замша. Исследование влияния торсионных полей на структуру воды методом ядерно-магнитного резонанса. *Неопубликованный отчет*, 2012.

[98] Саркисян Р.Ш., Карамян Г.Г., Варданян В.Т., Манукян А.М., Никогосян А.Г., Саркисян В.Р., and Даниелян И.А.. 'Биоскоп' – новый аппаратурный комплекс для исследования аномальных явлений. *Торсионные поля и информационные взаимодействия - 2012, материалы конференции*, page 115, 2012.

[99] Draayer J.P., Grigoryan H.R., Sargsyan R.Sh., and Ter-Grigoryan S.A. Systems and methods for investigation of living systems. *Патент US0149866*, 2007.

[100] А.Ю.Смирнов and Л.Т.Белецкая. Чувствительные к магнитному полю колебания поляризации света, рассеянного на стенках пустой кюветы. *Симпозиум 'Фундаментальные науки и альтернативная медицина'*, page 6, 1997.

[101] А.Ю.Смирнов. Дальние нелокальные приборные взаимодействия в формировании концепции 'телепортации информации'. *Материалы II-й международной научно-практической конференции 'Торсионные поля и информационные взаимодействия'*, pages 119–149, 2010.

[102] В.А.Жигалов. *Лабораторные работы с фантомами от торсионных генераторов*. Неопубликовано, 2010.

[103] Сергей Кернбах and Влад Жигалов. Отчет о проведении экспериментов по изучению эффекта 'фантомов'. *Журнал Формирующихся Направлений Науки*, 1(2):–, 2013.

[104] А.Е.Акимов, В.Я.Тарасенко, and С.Ю.Толмачев. Торсионная связь – новая физическая основа для систем передачи информации. *Электросвязь*, (5), 2001.

[105] André Simoneton. *Radiovitalité des aliments - hypothéses sur la vie et la santé*. Editions Humbert et fils, 1949.

[106] С. Кернбах. Исследование Проникающей Способности Светодиодного и Лазерного Излучения, ч.1. *Нано- и микросистемная техника*, 6:38–46, 2013.

[107] Сергей Кернбах. О Влиянии 'Энерго-Информационных' взаимодействий на корреляцию случайных событий. *готовится к публикации*, -(-):–, 2013.

[108] Paola A. Zapata, Diego F. Rojas, David A. Ramirez, Carlos Fernandez, and Lucia Atehortua. Effect of different light-emitting diodes on mycelial biomass production of ling zhi or reishi medicinal mushroom <i>ganoderma lucidum</i> (w. curt.: Fr.) p. karst. (aphyllophoromycetideae). *International Journal of Medicinal Mushrooms*, 11(1):93–99, 2009.

[109] EP Spalding and KM Folta. Illuminating topics in plant photobiology. *Plant, Cell and Environment*, 28:39–53, 2005.

[110] CF Johnson, CS Brown, RM Wheeler, JC Sager, DK Chapman, and GF Deitzer. Infrared light-emitting diode radiation causes gravitropic and morphological effects in dark-grown oat seedlings. *Photochem Photobiol*, 63:238–242, 1996.

[111] HH Kim, GD Goins, RM Wheeler, and JC Sager. Green light supplementation for enhanced lettuce growth under red and blue light-emitting diodes. *Hortscience*, 39:1617–1622, 2004.

[112] T Usami, N Mochizuki, M Kondo, M Nishimura, and A Nagatani. Cryptochromes and phytochromes synergistically regulate arabidopsis root greening under blue light. *Plant Cell Physiol*, 45:1798–1808, 2004.

[113] Kevin Folta, Lawrence Koss, Ryan McMorrow, Hyeon-Hye Kim, J Dustin Kenitz, Raymond Wheeler, and John Sager. Design and fabrication of adjustable red-green-blue led light arrays for plant research. *BMC Plant Biology*, 5(1):17, 2005.

[114] С.А.Мигунов, Е.П.Сидоров, and А.В.Творогова. Рефлексогенный механизм действия спектрального облучателя СПЕКТО-Р на иммобилизированные ферментные системы. *Рефлексотерапия*, 1(1):14–17, 2006.

[115] T. Castro-e Silva, O. Castro-e Silva, C. Kurachi, J. Ferreira, S. Zucoloto, and V.S. Bagnato. The use of light-emitting diodes to stimulate mitochondrial function and liver regeneration of partially hepatectomized rats. *Brazilian Journal of Medical and Biological Research*, 40:1065 – 1069, 08 2007.

[116] Camargo M.Z., Siqueira C.P., Preti M.C., Nakamura F.Y., de Lima F.M., Dias I.F., Toginho Filho Dde O., and Ramos Sde P. Effects of light emitting diode (LED) therapy and cold water immersion therapy on exercise-induced muscle damage in rats. *Lasers in Medical Science*, 27:1051–1058, 2012.

[117] C Cajochen, S Frey, D Anders, J Spдti, M Bues, A Pross, R Mager, A Wirz-Justice, and O Stefani. Evening exposure to a light-emitting diodes (led)-backlit computer screen affects circadian physiology and cognitive performance. *Journal of Applied Physiology*, 110(5):1432–8, 2011-05-01 00:00:00.0.

[118] А.В. Бобров. Биологические И Физические Свойства Активированной Воды (A.V. Bobrov, Biological and physical properties of activated water). In *ВИНИТИ N 2282-B2002*, 2002.

[119] А.В. Бобров. Взаимодействие спиновых полей материальных объектов (A.V. Bobrov, Interaction between spin fields of material objects). In *Материалы международной научной конференции. Хоста, Сочи, 25-29 августа*, pages 76–86, 2009.

[120] С. Кернбах. Исследование Проникающей Способности Светодиодного и Лазерного Излучения, ч.2. *Нано- и микросистемная техника*, 7:28–38, 2013.

[121] А.В. Бобров. Исследование неэлекторомагнитного компонента излучения квантовых генераторов. *ВИНИТИ 2222-B2001*, 2001.

[122] Mirela Maria Matioc-Precup and Dorina Cachiюг-Cosma. The germination and growth of brassica oleracea l. var. capitata f. rubra plantlets under the influence of colored light of different provenance. *Studia Universitatis Vasile Goldis*, 22:193–202, 2012.

[123] Scott A. Merkle, Paul M. Montello, Xiuqin Xia, Bruce L. Upchurch, and Dale R. Smith. Light quality treatments enhance somatic seedling production in three southern pine species. *Tree Physiology*, 26(2):187–194, 2006.

[124] Serge Kernbach. Действие Излучения Светодиодных Генераторов на Биологические Сенсоры. *готовится в публикации*, –(–):–, 2013.

[125] П.Кнеппо and Л.И.Титомир. *Биомагниные измерения*. М.: ЭНЕРГОАТОМИЗДАТ, 1989.

[126] H. Schmidt. Comparison of pk action on two different random number generators. *Journal of Parapsychology*, (38):47–55, 1974.

[127] В.Т.Шкатов and Н.А.Агапов. Распределение тонких полей в окрестности некоторых элементов и устройств техники. *Сознание и физическая реальность*, 15(2):45, 2010.

[128] В.Т. Шкатов and В.П. Замша. Эксперименты по межконтинентальной тонкополевой связи (ТПС) и управлению между городами Перт (Австралия) и Томск (Россия). *Торсионные поля и информационные взаимодействия - 2012, материалы конференции*, page 115, 2012.

[129] L.E. Rhine and J.B. Rhine. The psychokinetic effect: I. the first experiment. *Journal of Parapsychology*, (7):20–43, 1943.

[130] H. Schmidt. Quantum-mechanical random-number generator. *Journal of Applied Physics*, (41):462–468, 1970.

[131] H. Schmidt. Mental influence on random events. *New Scientist and Science Journal*, pages 757–758, 1971.

[132] B.J. Dunne, R.D. Nelson, and R.G. Jahn. Operater-related anomalies in a random mechanical cascade. *Journal of Scientific Exploration*, (2(2)):155–179, 1988.

[133] D. Nelson, D.I. Radin, R. Shoup, and P.A. Bancel. Correlation of continuous random data with major world events. *Technical Note PEAR 95004*, 1995.

[134] T. Hirukawa and M. Ishikawa. Anomalous fluctuation of rng data in nebula: Summer festival in northest japan. *The Parapsychological Association Convention*, pages 389–297, 2004.

[135] D. Radin, R. Taft, and G. Yount. Effects of healing intention on cultured cells and truly random events. *J. Altern Complement Med.*, (10(1)):103–112, 2004.

[136] J.P. Guilford and B. Fruchter. *Fundamental statistics in psychology and education*. McGraw-Hill Book Company, New York, 1976.

[137] L.V. Hedges and I. Olkin. *Statistical Methods for Meta-Analysis*. Academic Press, San Diego, CA, 1985.

[138] J.E. Freund. *Modern Elementary Statistics, 7th edition*. Prentice-Hall, NJ, 1988.

[139] В.Ф. Панов, В.В. Стрелков, В.Н. Чижов, and А.В. Клюев. Влияние торсионного поля на кристаллизацию сульфата меди в водном растворе. *Сознание и физическая реальность*, (7(4)):48–49, 2002.

[140] С.Н. Новиков, А.И. Ермолаева, С.П. Тимошенков, and Е.П. Германов. Дистанционная передача свойств лекарственных веществ воде – результат действия фононного механизма поверхностных сил дисперсных тел. *Журнал Формирующихся Направлений Науки*, (1(1)):60–68, 2013.

[141] В.В. Чукин and А.С. Платонова. Скорость гомогенного льдообразования в водных растворах. *Ученые записки российского государственного гидрометеорологического университета*, 9:70–79, 2009.

[142] С.А.Сандимиров, А.А.Сандимиров, and М.А.Сандимирова. Способ и устройство для очистки воды. *Патент RU2404131*, 2009.

[143] Gerd Buntkowsky, Hans-Heinrich Limbach, B. Walaszek, A. Adamczyk, Y. Xu, H. Breitzke, A. Schweitzer, T. Gutmann, M. Wächtler, N. Amadeu, D. Tietze, and Bruno Chaudret. Mechanisms of dipolar ortho/para-h2o conversion in ice. *Zeitschrift für Physikalische Chemie*, 222(7):1049–1063, 2008.

[144] Louis F. Maire III. *Soviet And Czechoslovakian Parapsychology Research: The Dia Report From 1975 With New Addenda*. lulu.com, 2011.

[145] В.Н.Бинги and А.Е.Акимов. О физике и психофизике. *М., Препринт / Межотрасл. науч.-техн. центр венчур. нетрадиц. технологий; N 35*, 1992.

[146] С. Кернбах. Радионика. Обзор глазами инженера. *Журнал Формирующихся Направлений Науки*, 1(3), 2013.

References (Translit)

[1] A.V. Zhigalov. *Harakternye jeffekty nejelektromagnitnogo izluchenija*. Internet publikacija, 2011.

[2] G.I. Shipov. *Teorija fizicheskogo vakuuma*. Moskva, NT-centr, 1993.

[3] A.V. Zhigalov. *Unichtozhenie torsionnyh issledovanij v Rossii*. Internet publikacija, 2009.

[4] V.A.Jetkin. Detektory jenergoinformacionnyh vzaimodejstvij. *Samizdat*, 2008.

[5] E.A.Akimov and G.I. Shipov. Torsionnye polja i ih jeksperimental'nye projavlenija. *Preprint, Mezhdunarodnyj institut teoreticheskoj i prikladnoj fiziki RAEN*, (4), 1995.

[6] I.A. Mel'nik. *Osoznanie 5j sily*. Moskva, Folium, 2010.

[7] V.I.Lunev. *Poiskovye jeksperimental'nye issledovanija v oblasti spin-torsionnyh vzaimodejstvij*. Tomsk, 1995.

[8] Valery A. Slaev, Anna G. Chunovkina, and Leonid A. Mironovsky. *Metrology and Theory of Measurement*. De Gruyter, 2013.

[9] OIML. *International Recommendation OIML R 63, MPetroleum measurement tables*. International Organization Of Legal Metrology, 1994.

[10] Raghunath Nambiar and Meikel Poess. *Performance Evaluation and Benchmarkings*. Springer, 2009.

[11] David J Jackson and Edgar Borgatta. *Factor Analysis and Measurement in Sociological Research: A Multi-Dimensional Perspective*. SAGE Publications, 1981.

[12] S. Kernbach. Unconventional research in USSR and Russia: short overview. *arXiv 1312.1148*, 2013.

[13] Samohvalov V.N. Jeksperimental'nye dokazatel'stva sushhestvovanija massodinamicheskih polej i sil. *Fundamental'nye problemy estestvoznanija i tehniki. Trudy Mezhdunarodnogo nauchnogo Kongressa*, 33:488–497, 2008.

[14] A.E.Akimov. Jevristicheskoe obsuzhdenie problemy poiska novyh dal'nodejstvij. EGS-koncepcii. *M., Preprint / Mezhotrasl. nauch.-tehn. centr venchur. netradic. tehnologij; N 7A*, page 63, 1991.

[15] Serge Kernbach. Replication attempt: Measuring water conductivity with polarized electrodes. *Journal of Scientific Exploration*, 27(1):69–105, 2013.

[16] S. Kernbah. Issledovanie Pronikajushhej Sposobnosti Svetodiodnogo i Lazernogo Izluchenija, ch.1, ch.2. *Nano- i mikrosistemnaja tehnika*, 6,7, 2013.

[17] A.V. Bobrov. *Model'noe Issledovanie Polevoj Koncepcii Mehanizma Soznanija (A.V. Bobrov, Investigating a field concept of consciousness)*. Orel, OrelGTU, 2006.

[18] I.N.Stepanov. Izluchenie formy. Sostojanie problemy. Obzor. *Internet publikacija, www.chronos.msu.ru/RREPORTS/stepanov_forma.pdf*, 2013.

[19] S.V. Mjakin, I.V. Vasil'eva, and A.V. Rudenko. Issledovanie vlijanija formiruemogo piramidoj polja na material'nye ob"ekty. *Coznanie i fizicheskaja real'nost'*, (7(2)):45–53, 2002.

[20] Dan A. Davidson. *Shape Power*. Rivas Pub, 1997.

[21] Ju.S.Potapov, P.P.Fominskij, and S.Ju.Potapov. *Jenergija vrashhenija*. Kishinev, 2001.

[22] V.G.Krasnobryzhev. Universal'naja sistema kvantovoj teleportacii. *Materialy I-j mezhdunarodnoj nauchno-prakticheskoj konferencii 'Torsionnye polja i informacionnye vzaimodejstvija'*, pages 486–499, 2009.

[23] Mark Krinker. Huygens-fresnel principle as a base for origination of spinning processes. *Materialy III-j mezhdunarodnoj nauchno-prakticheskoj konferencii 'Torsionnye polja i informacionnye vzaimodejstvija'*, pages 229–230, 2012.

[24] Mark Krinker. Spinning process based info-sensors. *Materialy III-j mezhdunarodnoj nauchno-prakticheskoj konferencii 'Torsionnye polja i informacionnye vzaimodejstvija'*, pages 223–228, 2012.

[25] Sergej Kernbah, Vitalij Zamsha, and Jurij Kravchenko. Dal'nie i Sverhdal'nye Pribornye Vzaimodejstvija. *Zhurnal Formirujushhihsja Napravlenij Nauki*, 1(1):24–42, 2013.

[26] S. Kernbah, V.T.Shkatov, and V. Zamsha. Otchet o provedenii jeksperimentov po sverhdal'nej svjazi s ispol'zovaniem cifrovogo otobrazhenija planety Mars. *Zhurnal Formirujushhihsja Napravlenij Nauki*, 1(2), 2013.

[27] H. E. Puthoff. Communication method and apparatus with signals comprising scalar and vector potentials without electromagnetic fields. *Patent US5845220*, 1998.

[28] N.A. Kozyrev. *Izbrannye trudy*. L.: Leningradskij Universitet, 1991.

[29] Lavren't'ev M.M., Eganova I.A., Lucet M.K., and Fominyh S.F. O reakcii veshhestva na vneshnij neobratimyj process. *Doklady AN SSSR*, (317(3)):635–639, 1991.

[30] Y. Aharonov and D. Bohm. Significance of Electromagnetic Potentials in the Quantum Theory. *Physical Review Online Archive (Prola)*, 115(3):485–491, 1959.

[31] V.N.Anosov and Je.M.Truhan. Novyj podhod k probleme vozdejstvija slabyh magnitnyh polej na zhivye ob"ekty. *Doklady Akademii Nauk: Biohimija, Biofizika i Molekljarnaja Biologija*, (392):1–5, 2003.

[32] Ivan Rampl, Vladimír Boudný, Milan Číž, Antonín Lojek, and Pavel Hyršl. Pulse vector magnetic potential and its influence on live cells. In *Proceedings of the 2009 International Conference on eHealth, Telemedicine, and Social Medicine*, ETELEMED '09, pages 99–107, Washington, DC, USA, 2009. IEEE Computer Society.

[33] A.V. Bobrov. Vzaimodejstvie spinovyh polej – pjatoe fundamental'noe vzaimodejstvie, ch.1. *Zhurnal Formirujushhihsja Napravlenij Nauki*, 1(1):48–57, 2013.

[34] S.A.Istomin and R.N.Kuz'min. Spin-torsionnye vzaimodejstvija v magnetikah. *Vestnik Mosk. un-ta. Ser.3: Fizika. Astronomija.*, (5):51–54, 1997.

[35] Vlatko Vedral. Quantifying entanglement in macroscopic systems. *Nature*, 453(7198):1004–1007, 2008.

[36] K. C. Lee, M. R. Sprague, B. J. Sussman, J. Nunn, N. K. Langford, X. M. Jin, T. Champion, P. Michelberger, K. F. Reim, D. England, D. Jaksch, and I. A. Walmsley. Entangling Macroscopic Diamonds at Room Temperature. *Science*, 334(6060):1253–1256, 2011.

[37] A.F.Ohatrin. Mikroleptonnaja dinamika i edinoe pole (Konceptual'naja Model'). *Special'naja tehnika sredstv svjazi, Serija obshhetehnicheskaja*, (2-3):106–110, 1992.

[38] A.Ju.Smirnov. Dal'nie nelokal'nye vzaimodejstvija mogut opredeljat'sja torsionnymi vozbuzhdenijami i volnami v virtual'noj plazme fizicheskogo vakuuma (gipotezy, konceptual'nyj i kachestvennyj analiz). *Materialy III-j mezhdunarodnoj nauchno-prakticheskoj konferencii 'Torsionnye polja i informacionnye vzaimodejstvija'*, pages 173–200, 2012.

[39] L.B.Boldyreva. Jeffekt polostnyh struktur. Model' sverhtekuchego fizicheskogo vakuuma. *Materialy III-j mezhdunarodnoj nauchno-prakticheskoj konferencii 'Torsionnye polja i informacionnye vzaimodejstvija'*, pages 53–59, 2012.

[40] Vejnik A.I. *Termodinamika real'nyh processov*. Minsk: "Navuka i tjehnika, 1991.

[41] Kobozev N.I. *Issledovanie v oblasti termodinamiki processov informacii i myshlenija*. M. Izd. MGU., 1971.

[42] S.Je. Shnol', T.A. Zenchenko, K.I. Zenchenko, Je.V. Pozharskij, V.A. Kolombet, and A.A. Konradov. Zakonomernoe izmenenie tonkoj struktury statisticheskih raspredelenij kak sledstvie kosmofizicheskih prichin. *Uspehi Fizicheskih Nauk*, (170(2)):214–218, 2000.

[43] L.E. Kolodnyj. *Fenomen 'D' i drugie*. M., Izdatel'stvo politicheskoj literatury, 1991.

[44] J. Beloff and L. Evans. A radioactivity test of phycho-kinesis. *Journal of the Society for Psychical Research*, 1961.

[45] R.A. Blasband. The ordering of random events by emotional expression. *Journal of Scientific Exploration*, (14(2)):195–216, 2000.

[46] Remy Chauvin. A PK experiment with mice. *Journal of the Society for Psychical Research*, (53(804)):348–351, 1986.

[47] R.G. Jahn. The presistent paradox of psychic phenomena: An engeenereeng perspective. *Proceedings of IEEE*, (70(2)):136–170, 1982.

[48] Brenda J. Dunne and Robert G. Jahn. Consciousness and anomalous physical phenomena. *Technical Note PEAR 95004*, 1995.

[49] Edward W. Russell. *Report on Radionics*. Saffron Walden: The C. W. Daniel Company Limited, 1997.

[50] Tony Scofield. The radionic principle: Mind over matter. *Radionic Journal*, (52(1&2)):5–16 & 7–12, 2007.

[51] L.D. Leiter. The pathology of organized skepticism. *Journal of Scientific Exploration*, (16(1)):125–128, 2002.

[52] A.V. Bobrov. Torsionnyj komponent jelektromagnitnogo izluchenija. Informacionnye torsionnye polja v medicine i rastenievodstve. *VINITI, 635-V98*, 1998.

[53] V.T. Shkatov. Detektirovanie torsionnyh polej. *Internet-publikacija, Tomsk, www.trinitas.ru/rus/doc/0231/004a/02311037.htm*, 2010.

[54] Ju.N. Cherednichenko and L.P. Mihajlova. Jeffekty formy i fazovye perehody pervogo roda: jeksperimental'noe issledovanie distantnyh vzaimodejstvij na fizicheskih datchikah i kletochnyh bioindikatorah. *Parapsihologija i psihofizika*, (2):67–73, 1999.

[55] S. Maslobrod, E. Maslobrod, and S. Kernbach. Long range interaction within the system 'semiconductor generator - matrix - seeds'. In *Proceedings of conference 'Bio-Energy-Information Interactions. Ecology and Safety'*, Moscow, 2013.

[56] S.N. Maslobrod, V.G.Karanfil, and S.Kernbach. Change of morphological parameters of seeds and sprout of wheat at a distant energoinformation impact on seeds and soil. In *Proceedings of XXII international symposium 'Protection of bio- noosphere. Eniology. Unconventional plant cultivation. Ecology and medicine'*, Alushta, 2013.

[57] S.N. Maslobrod, S. Kernbah, and E.S. Maslobrod. K voprosu o nelokal'noj svjazi v sisteme fizicheskih i biologicheskih makroob"ektov. *(gotovitsja k publikacii) Zhurnal Formirujushhihsja Napravlenij Nauki*, 1(–):–, 2013.

[58] V.A. Acjukovskij. Obnaruzhenie i nejtralizacija geopatogennyh izluchenij zemli. *Materialy III-j mezhdunarodnoj nauchno-prakticheskoj konferencii 'Torsionnye polja i informacionnye vzaimodejstvija'*, pages 305–310, 2012.

[59] Serge Kernbach and Olga Kernbach. O vlijanii geometrii strukturnyh jelementov na parametry vysochastotnoj nekontaktnoj konduktometrii. *napravlen dlja publikacii*, pages —, 2013.

[60] Ju.V. Czjan Kan'chzhjen. Sposob omolozhenija organizma. *Patent RU2057808*, 1991.

[61] A.Ju. Smirnov. Koncepcija teleportacii informacii. *Internet publikacija, akimovae.com/en/product/koncepcija-teleportacii-informacii/.*

[62] Shkatov V.T. Issledovanie vozmozhnosti pribornoj ustanovki silovogo fantoma na podvizhnuju plavajushhuju platformu. *Torsionnye polja i informacionnye vzaimodejstvija - 2012, materialy konferencii*, pages 126–131, 2012.

[63] R. Voll. *Die Messpunkte der EAV an Händen und Füssen.* ML-Verlag Uelzen, 1992.

[64] Roth Trude. Erdstrahlungentstörungsgerät. Patent DE3416156A1, 02.05.1984.

[65] Sokolova V.A. *Pervoe jeksperimental'noe podtverzhdenie sushhestvovanija torsionnyh polej i perspektivy ih ispol'zovanija v narodnom hozjajstve.* Moskva, 2002.

[66] Sergej Esiev. *Reshenie problem obespechenija biologicheskoj bezopasnosti naselenija pri potreblenii prodovol'stvija na osnove monitoringa i kontrolja jelektromagnitnyh harakteristik i drugih svojstv prirody v regionah proizvodjashhih prodovol'stvie.* Internet publikacija, 2002.

[67] Ju.V.Tkachuk, S.D.Jaremchuk, and A.A.Fedotov. Jeksperimental'noe issledovanie vozdejstvija vrashhajushhihsja ferrit-magnitnyh diskov na reakciju gidratacii uksusnogo angidrida. *Materialy II-j mezhdunarodnoj nauchno-prakticheskoj konferencii 'Torsionnye polja i informacionnye vzaimodejstvija'*, pages 106–110, 2010.

[68] A.Ju.Smirnov and O.V.Astahova. Chastotnaja simmetrija nestacionarnoj fluorescencii rastvorov ChSA. *Cimpozium 'Fundamental'nye nauki i al'ternativnaja medicina'*, page 5, 1997.

[69] A.Ju.Smirnov and L.T.Beleckaja. Vosproizvodimye pereodicheskie angarmonicheskie kolebanija kojefficienta poljarizacii fluorescencii vodnyh rastvorov syvorotochnogo al'bumina i triptofana i vlijanie na nih postojannogo magnitnogo polja. *Slabye i sverhslabye polja i izluchenija v biologii i medicine*, pages 94–95, 1997.

[70] G.N. Dul'nev and A.P. Ipatov. *Issledovanija javlenij jenergoinformacionnogo obmena: jeksperimental'nye rezul'taty.* GITMO, Sankt-Peterburg, 1998.

[71] S.N. Maslobrod. Jeffekt dal'nej svjazi mezhdu prorastajushhimi semenami, voznikajushhij pri ih kontakte v period nabuhanija (S. Maslobrod, Effect of a long range interaction appeared between germinating seeds. *Jelektronnaja obrabotka materialov (Electronic processing of materials)*, 48(6):99–113, 2012.

[72] S.N.Maslobrod, E.S.Maslobrod, and O.M.Sidorova. Izmenenie sostojanija semjan pod vlijaniem vozdejstvija fiziko-himicheskogo stressa na ih fotograficheskie izobrazhenija (S.Maslobrod, E.Maslobrod, O.Sidorova, Change of seeds' state under physico-chemical stress impacting thier images. *Materialy VIII Mezhd.Krymskoj konf. 'Kosmos i biosfera', Kiev (Proceedings of the VIII Int. Conf. 'Kosmos and Biosphere')*, pages 151–153, 2009.

[73] S.N. Maslobrod. The distant effect of water on seeds outside a closed reservoir. *Surface Engineering and Applied Electrochemistry*, 47(4):378–383, 2011.

[74] A.E.Akimov, M.V.Kurik, and V.Ja.Tarasenko. Vlijanie spinornogo (torsionnogo) polja na process kristallizacii miceljarnyh struktur. *Biotehnologija*, (3):69, 1991.

[75] Masaru Emoto, Gail Hayssen, Takashige Kizu, and Dean Radin. Double-blind test of the effects of distant intention on water crystal formation explore. *Journal of Scientific Exploration*, (5):408–11, 2006.

[76] D. Radin, N. Lund, M. Emoto, and T. Kizu. Effects of distant intention on water crystal formation: A triple-blind replication. *Journal of Scientific Exploration*, (22 (4)):481–493, 2008.

[77] Ju.I.Belonosov. Jeffekt vozdejstvija 'aktivirovannyh' polimerov na biologicheskie ob"ekty ili anomal'nye svojstva 'aktivirovannyh' polimerov. Obzor. *Internet publikacija www.veinik.ru/science/experiment/article/724.html*, 2007.

[78] A.V.Kljuev, S.A.Kurapov, V.F.Panov, V.V.Strelkov, N.A.Kokareva, and A.E.Bojarshinov. Struktura i mehanicheskie svojstva metalla posle obrabotki rasplava v nestacionarnom jelektromagnitnom pole volnovogo izluchatelja. *Metallovedenie, termicheskaja obrabotka metallov*, (7 (649)):3–9, 2009.

[79] Radjuk M.S. Jeffekt 'neodnorodnosti prostranstva' v biologicheskih i fizicheskih processah. *Kvantovaja magija*, (3(4)):4141–4155, 2006.

[80] Radjuk M.S. Fantomnyj jeffekt. *Kvantovaja magija*, (7(4)):4139–4143, 2010.

[81] A.G.Parhomov. Upravljaemyj Haos. *Materialy I-j mezhdunarodnoj nauchno-prakticheskoj konferencii 'Torsionnye polja i informacionnye vzaimodejstvija'*, pages 259–265, 2009.

[82] J. Lyklema. *Fundamentals of Interface and Colloid Science.* Academic Press, 2005.

[83] M. L. Belaya, M. V. Feigel'man, and V. G. Levadnyii. Structural forces as a result of nonlocal water polarizability. *Langmuir*, 3(5):648–654, 1987.

[84] S.V.Zenin. Ob"ektivizacija i mehanizm zashhitnogo dejstvija ustrojstv klassa 'Vita'. *Medicina truda i promyshlennaja jekologija*, (9), 2002.

[85] N.I. Muzalevskaja and A.V. Bobrov. O vozmozhnoj roli dvojnyh jelektricheskih sloev v reakcii biologicheskih ob"ektov na vneshnie vozdejstvija (N.I. Muzalewskay, A.V. Bobrov, On a possible role of electrical double layer in reaction of biological objects on external influences). *Biofizika*, 33(4):725, 1988.

[86] A.A. Ashheulov, Ju.B. Dobrovol'skij, and V.A. Bezulik. Vozdejstvie jelektricheskogo i magnitnogo polej na parametry poluprovodnikovyh priborov. *Tehnologija i konstruirovanie v jelektronnoj apparature*, (1):33–35, 2000.

[87] Shapovalov A. Kratkoe soobshhenie. *Tehnika molodezhi*, (6), 1978.

[88] V.A.Pancheljuga. Detektor Smirnova: registracija vozdejstvij ot udalennyh astrofizicheskih ob"ektov. *Metafizika*, (2(4)):67–80, 2012.

[89] R. Janhn, B. Dunne, G. Bradish, Y. Dobyns, A. Lettieri, R. Nelson, J. Mischo, E. Boller, H. Boesch, D. Vaitl, J. Houtkooper, and B. Walter. Mind/machine interaction consortium: Portreg replication experiments. *Journal of Scientific Exploration*, (14(4)):499–555, 2000.

[90] J. Hagel and M. Tschapke. The local event detector (led). an experimental setup for an exploratory study of correlation between collective emotional events and random number sequences. *Proceeding of The Parapsychological Association Convention*, pages 379–388, 2004.

[91] D. Radin. Exploring relationships between random physical events and mass human attention: Asking for whom the bell tolls. *Journal of Scientific Exploration*, (16(4)):533–547, 2002.

[92] Serge Kernbach. On high-penetrating LEDs emission on short and middle ranges. In *Proc. of the Int. Conf. Torsion fields and Information Interactions*, pages 98–114. Moscow, 2012.

[93] V.P.Zamsha and V.T.Shkatov. O vozmozhnom sposobe sverhdal'nej peredachi avarijnogo signala v jekstremal'nyh i chrezvychajnyh situacijah. *Sbornik UGATU 'Bezopasnost" 2012*, page 128, 2012.

[94] Ju.P.Kravchenko and N.V.Kalashchenko. K voprosu o registracii jelektromagnitnogo izluchenija chelovecheskogo organizma v celjah medicinskoj diagnostiki. *Parapsihologija i Psihofizika*, (4(16)):67–80, 1994.

[95] A.A.Andreev, V.A.Zhigalov, Ju.P.Kravchenko, and M.Krinker. Chto detektiruet pribor IGA-1 i ego analogi? Jeffekty i gipotezy. *Materialy II-j mezhdunarodnoj nauchno-prakticheskoj konferencii 'Torsionnye polja i informacionnye vzaimodejstvija'*, pages 50–69, 2010.

[96] V.G.Korotkov. Metod gazorazrjadnoj vizualizacii (GRV) - novyj nauchnyj instrument dlja izuchenija aury cheloveka. *'Ot jeffekta Kirlian k biojelektrografii', SPb, Izd.-vo 'Ol'ga'*, pages 18–23, 1998.

[97] MSU and Vitalij Zamsha. Issledovanie vlijanija torsionnyh polej na strukturu vody metodom jaderno-magnitnogo rezonansa. *Neopublikovannyj otchet*, 2012.

[98] Sarkisjan R.Sh., Karamjan G.G., Vardanjan V.T., Manukjan A.M., Nikogosjan A.G., Sarkisjan V.R., and Danieljan I.A..

'Bioskop' – novyj apparaturnyj kompleks dlja issledovanija anomal'nyh javlenij. *Torsionnye polja i informacionnye vzaimodejstvija - 2012, materialy konferencii*, page 115, 2012.

[99] Draayer J.P., Grigoryan H.R., Sargsyan R.Sh., and Ter-Grigoryan S.A. Systems and methods for investigation of living systems. *Patent US0149866*, 2007.

[100] A.Ju.Smirnov and L.T.Beleckaja. Chuvstvitel'nye k magnitnomu polju kolebanija poljarizacii sveta, rassejannogo na stenkah pustoj kjuvety. *Cimpozium 'Fundamental'nye nauki i al'ternativnaja medicina'*, page 6, 1997.

[101] A.Ju.Smirnov. Dal'nie nelokal'nye pribornye vzaimodejstvija v formirovanii koncepcii 'teleportacii informacii'. *Materialy II-j mezhdunarodnoj nauchno-prakticheskoj konferencii 'Torsionnye polja i informacionnye vzaimodejstvija'*, pages 119–149, 2010.

[102] V.A.Zhigalov. *Laboratornye raboty s fantomami ot torsionnyh generatorov.* Neopublikovano, 2010.

[103] Sergej Kernbah and Vlad Zhigalov. Otchet o provedenii jeksperimentov po izucheniju jeffekta 'fantomov'. *Zhurnal Formirujushhihsja Napravlenij Nauki*, 1(2):–, 2013.

[104] A.E.Akimov, V.Ja.Tarasenko, and S.Ju.Tolmachev. Torsionnaja svjaz' – novaja fizicheskaja osnova dlja sistem peredachi informacii. *Jelektrosvjaz'*, (5), 2001.

[105] André Simoneton. *Radiovitalité des aliments - hypothéses sur la vie et la santé.* Editions Humbert et fils, 1949.

[106] S. Kernbah. Issledovanie Pronikajushhej Sposobnosti Svetodiodnogo i Lazernogo Izluchenija, ch.1. *Nano- i mikrosistemnaja tehnika*, 6:38–46, 2013.

[107] Sergej Kernbah. O Vlijanii 'Jenergo-Informacionnyh' vzaimodejstvij na korreljaciju sluchajnyh sobytij. *gotovitsja k publikacii*, -(-):–, 2013.

[108] Paola A. Zapata, Diego F. Rojas, David A. Ramirez, Carlos Fernandez, and Lucia Atehortua. Effect of different light-emitting diodes on mycelial biomass production of ling zhi or reishi medicinal mushroom <i>ganoderma lucidum</i> (w. curt.: Fr.) p. karst. (aphyllophoromycetideae). *International Journal of Medicinal Mushrooms*, 11(1):93–99, 2009.

[109] EP Spalding and KM Folta. Illuminating topics in plant photobiology. *Plant, Cell and Environment*, 28:39–53, 2005.

[110] CF Johnson, CS Brown, RM Wheeler, JC Sager, DK Chapman, and GF Deitzer. Infrared light-emitting diode radiation causes gravitropic and morphological effects in dark-grown oat seedlings. *Photochem Photobiol*, 63:238–242, 1996.

[111] HH Kim, GD Goins, RM Wheeler, and JC Sager. Green light supplementation for enhanced lettuce growth under red and blue light-emitting diodes. *Hortscience*, 39:1617–1622, 2004.

[112] T Usami, N Mochizuki, M Kondo, M Nishimura, and A Nagatani. Cryptochromes and phytochromes synergistically regulate arabidopsis root greening under blue light. *Plant Cell Physiol*, 45:1798–1808, 2004.

[113] Kevin Folta, Lawrence Koss, Ryan McMorrow, Hyeon-Hye Kim, J Dustin Kenitz, Raymond Wheeler, and John Sager. Design and fabrication of adjustable red-green-blue led light arrays for plant research. *BMC Plant Biology*, 5(1):17, 2005.

[114] S.A.Migunov, E.P.Sidorov, and A.V.Tvorogova. Refleksogennyj mehanizm dejstvija spektral'nogo obluchatelja SPEKTO-R na immobilizirovannye fermentnye sistemy. *Refleksoterapija*, 1(1):14–17, 2006.

[115] T. Castro-e Silva, O. Castro-e Silva, C. Kurachi, J. Ferreira, S. Zucoloto, and V.S. Bagnato. The use of light-emitting diodes to stimulate mitochondrial function and liver regeneration of partially hepatectomized rats. *Brazilian Journal of Medical and Biological Research*, 40:1065 – 1069, 08 2007.

[116] Camargo M.Z., Siqueira C.P., Preti M.C., Nakamura F.Y., de Lima F.M., Dias I.F., Toginho Filho Dde O., and Ramos Sde P. Effects of light emitting diode (LED) therapy and cold water immersion therapy on exercise-induced muscle damage in rats. *Lasers in Medical Science*, 27:1051–1058, 2012.

[117] C Cajochen, S Frey, D Anders, J Spdti, M Bues, A Pross, R Mager, A Wirz-Justice, and O Stefani. Evening exposure to a light-emitting diodes (led)-backlit computer screen affects circadian physiology and cognitive performance. *Journal of Applied Physiology*, 110(5):1432–8, 2011-05-01 00:00:00.0.

[118] A.V. Bobrov. Biologicheskie I Fizicheskie Svojstva Aktivirovannoj Vody (A.V. Bobrov, Biological and physical properties of activated water). In *VINITI N 2282-V2002*, 2002.

[119] A.V. Bobrov. Vzaimodejstvie spinovyh polej material'nyh ob"ektov (A.V. Bobrov, Interaction between spin fields of material objects). In *Materialy mezhdunarodnoj nauchnoj konferencii. Hosta, Sochi, 25-29 avgusta*, pages 76–86, 2009.

[120] S. Kernbah. Issledovanie Pronikajushhej Sposobnosti Svetodiodnogo i Lazernogo Izluchenija, ch.2. *Nano- i mikrosistemnaja tehnika*, 7:28–38, 2013.

[121] A.V. Bobrov. Issledovanie nejelektoromagnitnogo komponenta izluchenija kvantovyh generatorov. *VINITI 2222-V2001*, 2001.

[122] Mirela Maria Matioc-Precup and Dorina Cachijug-Cosma. The germination and growth of brassica oleracea l. var. capitata f. rubra plantlets under the influence of colored light of different provenance. *Studia Universitatis Vasile Goldis*, 22:193–202, 2012.

[123] Scott A. Merkle, Paul M. Montello, Xiuqin Xia, Bruce L. Upchurch, and Dale R. Smith. Light quality treatments enhance somatic seedling production in three southern pine species. *Tree Physiology*, 26(2):187–194, 2006.

[124] Serge Kernbach. Dejstvie Izluchenija Svetodiodnyh Generatorov na Biologicheskie Sensory. *gotovitsja v publikacii*, –(–):–, 2013.

[125] P.Kneppo and L.I.Titomir. *Biomagninye izmerenija.* M.: JeNERGOATOMIZDAT, 1989.

[126] H. Schmidt. Comparison of pk action on two different random number generators. *Journal of Parapsychology*, (38):47–55, 1974.

[127] V.T.Shkatov and N.A.Agapov. Raspredelenie tonkih polej v okrestnosti nekotoryh jelementov i ustrojstv tehniki. *Soznanie i fizicheskaja real'nost'*, 15(2):45, 2010.

[128] V.T. Shkatov and V.P. Zamsha. Jeksperimenty po mezhkontinental'noj tonkopolevoj svjazi (TPS) i upravleniju mezhdu gorodami Pert (Avstralija) i Tomsk (Rossija). *Torsionnye polja i informacionnye vzaimodejstvija - 2012, materialy konferencii*, page 115, 2012.

[129] L.E. Rhine and J.B. Rhine. The psychokinetic effect: I. the first experiment. *Journal of Parapsychology*, (7):20–43, 1943.

[130] H. Schmidt. Quantum-mechanical random-number generator. *Journal of Applied Physics*, (41):462–468, 1970.

[131] H. Schmidt. Mental influence on random events. *New Scientist and Science Journal*, pages 757–758, 1971.

[132] B.J. Dunne, R.D. Nelson, and R.G. Jahn. Operater-related anomalies in a random mechanical cascade. *Journal of Scientific Exploration*, (2(2)):155–179, 1988.

[133] D. Nelson, D.I. Radin, R. Shoup, and P.A. Bancel. Correlation of continuous random data with major world events. *Technical Note PEAR 95004*, 1995.

[134] T. Hirukawa and M. Ishikawa. Anomalous fluctuation of rng data in nebula: Summer festival in northest japan. *The Parapsychological Association Convention*, pages 389–297, 2004.

[135] D. Radin, R. Taft, and G. Yount. Effects of healing intention on cultured cells and truly random events. *J. Altern Complement Med.*, (10(1)):103–112, 2004.

[136] J.P. Guilford and B. Fruchter. *Fundamental statistics in psychology and education.* McGraw-Hill Book Company, New York, 1976.

[137] L.V. Hedges and I. Olkin. *Statistical Methods for Meta-Analysis.* Academic Press, San Diego, CA, 1985.

[138] J.E. Freund. *Modern Elementary Statistics, 7th edition.* Prentice-Hall, NJ, 1988.

[139] V.F. Panov, V.V. Strelkov, V.N. Chizhov, and A.V. Kljuev. Vlijanie torsionnogo polja na kristallizaciju sul'fata medi v vodnom rastvore. *Soznanie i fizicheskaja real'nost'*, (7(4)):48–49, 2002.

[140] S.N. Novikov, A.I. Ermolaeva, S.P. Timoshenkov, and E.P. Germanov. Distancionnaja peredacha svojstv lekarstvennyh veshhestv vode – rezul'tat dejstvija fononnogo mehanizma poverhnostnyh sil dispersnyh tel. *Zhurnal Formirujushhihsja Napravlenij Nauki*, (1(1)):60–68, 2013.

[141] V.V. Chukin and A.S. Platonova. Skorost' gomogennogo l'doobrazovanija v vodnyh rastvorah. *Uchenye zapiski rossijskogo gosudarstvennogo gidrometeorologicheskogo universiteta*, 9:70–79, 2009.

[142] S.A.Sandimirov, A.A.Sandimirov, and M.A.Sandimirova. Sposob i ustrojstvo dlja ochistki vody. *Patent RU2404131*, 2009.

[143] Gerd Buntkowsky, Hans-Heinrich Limbach, B. Walaszek, A. Adamczyk, Y. Xu, H. Breitzke, A. Schweitzer, T. Gutmann, M. Wächtler, N. Amadeu, D. Tietze, and Bruno Chaudret. Mechanisms of dipolar ortho/para-h2o conversion in ice. *Zeitschrift für Physikalische Chemie*, 222(7):1049–1063, 2008.

[144] Louis F. Maire III. *Soviet And Czechoslovakian Parapsychology Research: The Dia Report From 1975 With New Addenda*. lulu.com, 2011.

[145] V.N.Bingi and A.E.Akimov. O fizike i psihofizike. *M., Preprint / Mezhotrasl. nauch.-tehn. centr venchur. netradic. tehnologij; N 35*, 1992.

[146] S. Kernbah. Radionika. Obzor glazami inzhenera. *Zhurnal Formirujushhihsja Napravlenij Nauki*, 1(3), 2013.