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Earth: Seismic Fields, Volcanoes, Solar and Astrophysical Neutrino Fluxes

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Abstract

An attempt is made to logically and experimentally combine consideration of known geophysical and astrophysical processes and objects into a single system with common cause-effect relationships taking into account the most important role of the anomalous neutrino radioactivity isotope absorption (ANRI effect). Accordingly, many difficulties in explaining the genesis of some features of the Earth's wave fields, volcanic activity should become more accessible for resolution when considering the effect of solar neutrino flux modulated by solar oscillations interacting with radioactive geological structures of the Earth's crust. Another important but little studied private geophysical object is the volcano and its energy, the explosive form of the eruption. With these problems, some studies on the seismicity of the Moon are associated. Thus, the geophysics of the Earth, like the Moon, requires a general astrophysical understanding.

Keywords

Anomalous Neutrino Radioactivity Isotope Absorption; General Seismic Periodicity of the Sun and Earth; Activity of Volcanoes and the Sun, Astrophysical Activity on Earth and the Moon

Introduction

The Earth's magnetic field and its variations, the dynamo mechanism in the central zone of the planet, volcanism and global tectonic processes - all this is mainly determined by the radioactive component of heat fluxes, the variable part of which is associated with external neutrino fluxes. Since global tectonic processes are accompanied by deformations of geological structures, then this entails a partial conversion of their energy into earthquakes. In this case, a seismic wave field of a wide frequency range is formed: from seismic acoustic fields (102-104 Hz) to low-frequency fields, with periods of natural oscillations of the Earth and more. Probably, taking into account the results of recent geophysical studies, including the present, both volcanism and wave processes can be attributed to the independent division of solar-terrestrial physics, and in the future astrophysics [1]. This is a very important topic and requires self-examination. The proposed studies provide for taking into account the effect of anomalous neutrino radioisotope (ANRI) absorption for radioactive rocks of the Earth and the Moon [2-6].

Seismic Fields and the Sun

Both of these objects of study did not immediately "find" each other and initially developed for a long time independently, but in parallel [1,7-10]. However, for some researchers and now the connection of seismic fields and solar oscillations is a thing incomprehensible [11, 12]. For the first time, solar-terrestrial connections in seismology were most clearly, but not entirely clear to researchers of that time, manifested when recording by the modulation method of the wave field from the Gazli region earthquake, M> 7 (Turkmenia) in 1976y.[8]. Then it was observed that after some strong earthquakes with M> 7.0, the noise level was disturbed by some process, periodically increasing the noise level by three times or more. Figure 1 shows the fragments of the record of periodic variations

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of the disturbed VNS level, the so-called meanders, for a comprehensive proof of the reliability of which was spent a lot of time.

A precise estimate of the periods of this process showed their proximity to the periods of some forms and modes of the Earth's natural oscillations, but for understandable reasons the results were not correlated with data not yet appeared [7], which are still considered fundamental (Table 1).

The values of the observed periods usually did not change within a dozen seconds per day. Sometimes there was an abrupt change in the period, sometimes a slow drift, which probably corresponded to a transition to another dominant tone of the oscillations (Figure 2). The duration of periodic increases (meanders) usually did not exceed half, and in some cases was less than a quarter of the observed process. Periodic increases in noise levels in some cases alternated with a virtually unperturbed background. Also, as the amplitudes of periodic noise increases decrease the unperturbed interval increases [8], Figure 3.

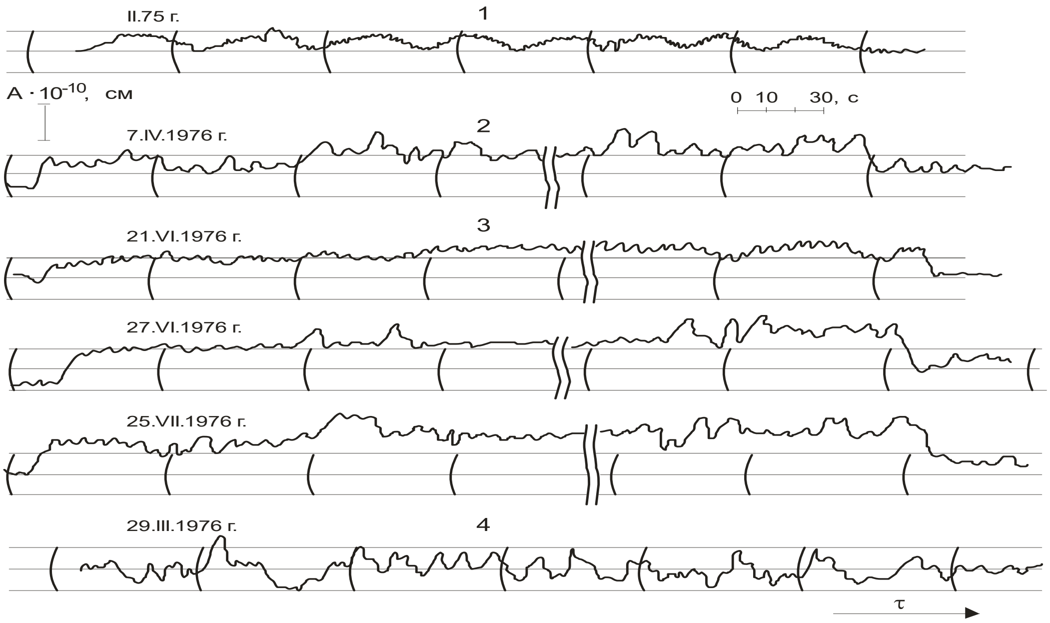
A more detailed description of the methodology for constructing the graphs of Figure 2 is given in [8]. Both the drift of long-period oscillations in time (Figure 2) and the appearance of a soft restoring force in the analysis of their amplitude-frequency characteristics indicate a pronounced nonlinearity of the process, which was first considered in [13] in the general case. Accordingly the joint analysis of the experimental data for 1975-1976 showed that at a significant level of the released total seismic energy (~10^{25} ergs), this feature of the excited state of the Earth-oscillator exists for a long time (a month or more). This duration of the existence of the oscillation regime is difficult to explain economically; The earthquake occurred more than a month ago, and its energy was distributed and dissipated in the earth's volume in a few days. In this case, a "shift" of the energy of oscillations of small periods into oscillations of the lower-frequency part of the spectrum was observed (from 10÷12 to 18÷20-minute periods of long-period oscillations and even to the region of 120-140 min). To describe these processes, two equations were considered - Mathieu, and then a more correct one - an analog of the Duffing equation. The analysis led to general conclusions.

Earth is a nonlinear oscillator, described by the stochastic system of Duffing equations, under the influence of stationary normal white noise (atmospheric, oceanic, seismic, hydrological disturbances), in the case of soft nonlinearity of the restoring force will "swing" with ever increasing amplitudes and at ever lower frequencies, since the phase trajectories of the system tend to go to infinity [14]. That is, we have a complex nonlinear system with many parameters, and the prediction of its behavior should be attributed to the problems of the statistical theory of open systems [15, 16]. Scenarios of chaotization (self-organization) of such a system are not exactly known. The nonlinearity of long-period oscillations of the Earth was also observed in the Alaska and Mexican earthquakes of 1979, while the transfer of energy from short periods of natural oscillations was completed at 55 and 95 minutes. (for the Sun - 55.05, 95.38min), and the natural oscillations of the Earth could be distinguished only through spectral analysis (Figure 4).

A search was made to link the variations of high-frequency seismic noise (VSSH) at the point of registration with the earth's seismicity as a whole. To do this selected some parameters that characterize the seismicity of the Earth and the VSC. For the parameter that characterizes the seismicity of the Earth, the seismic energy of all earthquakes on Earth occurred within 24 hours; for the parameter of seismic- acoustic noise-the average for a day the square of the amplitude of their envelope at the output of a narrow-band filter, connected with the value of the function (energy) spectral density in a given frequency band: at. This allowed us to expect a linear relationship between the selected parameters. In addition to the square of the amplitude, a parameter characterizing periodic noise increases was considered: the ratio of the mean square of the square of the amplitude of the rise of the meander to the square of the amplitude of the envelope of the unperturbed level. It was obtained that the correlation coefficient r between the mean square of the amplitude of the envelope of noise and the energy of earthquakes for the previous day E1 is equal to r = 0.6, and between the ratio of the squares of the amplitudes and E1 - r = 0.8, while between noise and earthquake energy for data day correlation is absent, which again raises the question of the energy source. The significance of the correlation coefficient in these cases was more than 0.99. In conclusion, all the peaks recorded in the studies [8] were presented in the general Table 2, which has already been supplemented with data [7].

From the consideration of Table 2 it follows that all the experimentally recorded periods of Earth's oscillations quite accurately (sometimes up to the 3rd, 4th sign) coincided with the periods of solar oscillations. To explain this phenomenon, as well as the energy of their

Figure 1: Types of Meanders (from Top to Bottom, 1-4) from Observations in 1975-1976y.y., Pulling Speed 1 mm / s



1 - Sinusoidal Perturbations; 2 - Table-Shaped (Meanders); 3 - Meanders with a High-Frequency Sinusoid; 4 - Moment of Disappearance of the Meander

Table1: Periods of Solar Oscillations for the Standard Solar Model [2]

Mode	Period, Min					Mode	Period, Min			
	1=0	1=1	1=2	1=3	1=4		1=1	1=2	1=3	1=4
p 1	62,29	57,25	42,50	39,53	37,58	F		45,90	40,97	38,82
p 2	40,94	36,98	32,19	29,42	27,62	g 1	61,58	55,05	47,94	44,18
p 3	30,93	27,88	25,09	23,21	21,92	g 2	84,4	63,03	54,88	49,59
p 4	24,49	22,30	20,52	19,26	18,31	g 3	105,8	72,58	61,88	57,73
p 5	20,19	18,68	17,39	16,44	15,72	g 4	127,3	83,49	67,76	61,11
p 6	17,17	16,04	15,10	14,38	13,81	g 5	149,2	95,38	74,9	64,89
p 7	14,93	14,08	13,35	12,77	12,32	g 6	171,1	107,7	83,1	70,30
p 8	13,21	12,55	11,97	11,51	11,14	g 7		120,2	91,8	76,83
p 9	11,86	11,34	10,87	10,49	10,18	g 8		132,9	100,7	83,62
p 10	10,78	10,35	9,97	9,65	9,39	g 9		145,9	109,7	90,56
p 11	9,90	9,54	9,21	8,94	8,71	g 10		158,9	118,9	97,62
p 12	9,15	8,84	8,56	8,32	8,11	g 11		172,1	128,1	104,5
p 13	8,50	8,23	7,99	7,78	7,60	g 12			137,6	111,7
p 14	7,94	7,71	7,49	7,31	7,15	g 13			147,0	118,9
p 15	7,45	7,25	7,06	6,89	6,75	g 14			156,5	126,5
p 16	7,02	6,84	6,67	6,52	6,39	g 15			166,7	133,3
p 17	6,64	6,47	6,32	6,18	6,06	g 16			175,9	141,5
p 18	6,29	6,14	6,00	5,87	5,77	g 17				148,6
p 19	5,98	5,84	5,71	5,60	5,50	g 18				156,4
p 20	5,69	5,58	5,45	5,34	5,25	g 19				164,0
						g 20				171,1

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Figure 2: The Time Evolution of Long - Period Oscillations of the Earth

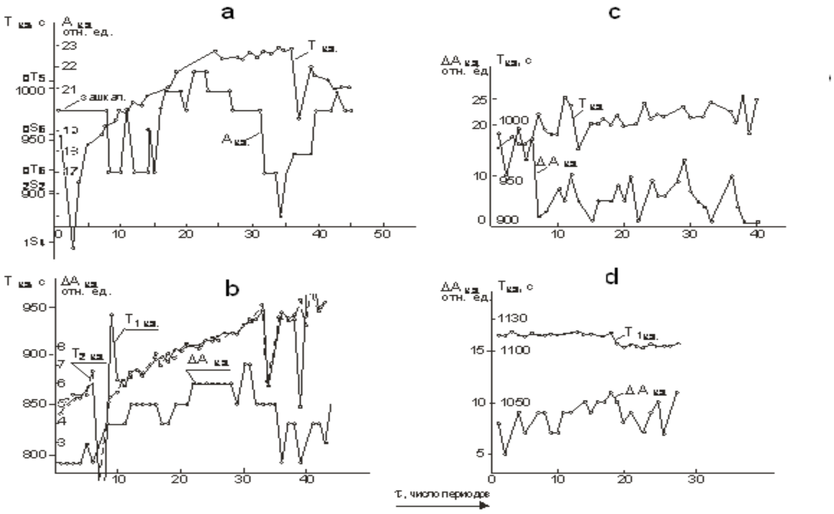
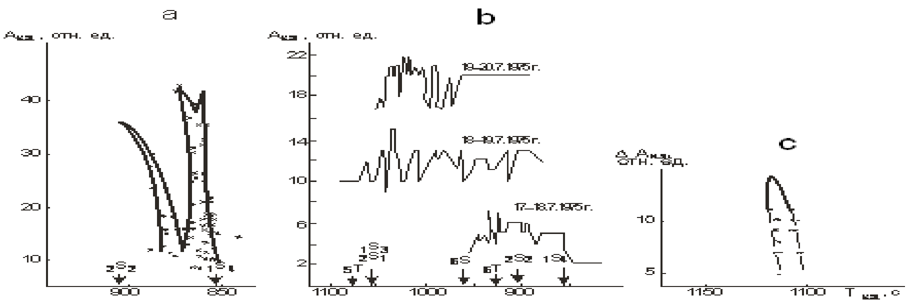
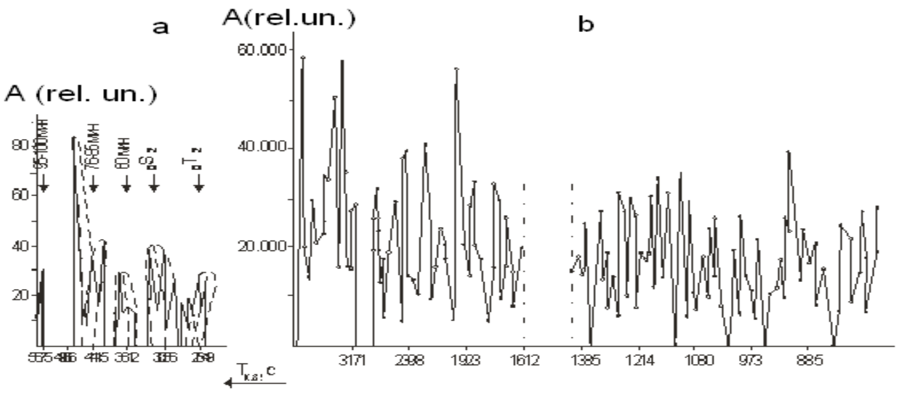


Figure 3: The Manifestation of a “Soft” Restoring Force Due to a Seismically Active Medium for a Portion of the Earth’s Vibration Spectrum; Amplitude Growth of Oscillations



a - is the Drift of Earth’s Oscillation Periods and Synchronous Changes in the Amplitudes of the Earth Oscillations of $A_{E.O.}$ $A_{E.O} = A_{E.O}$ (τ), $T_{E.O.} = T_{E.O}$ (τ) for 19-20.07.1975;
b-$A_{E.O}$=$\Delta A_{E.O}$(τ), $T_{E.O.}$=$T_{E.O}$.(τ) for 17-18.07.1975;
c-$\Delta A_{E.O}$.=$A_{E.O}$(τ), $T_{E.O.}$=$T_{E.O}$.(τ) for 5-6.06.1976, Moscow Region;
d -$\Delta A_{E.O}$.=$A_{E.O}$(τ), $T_{E.O.}$=$T_{E.O}$.(τ) for 27.06.1976, Moscow Region

Figure 4: Evolution of the Spectra of the Earth’s Own and Long-Period Oscillations in Time According to the Data of [8]



a – the Spectrum of an Earthquake in Mexico, b - an Earthquake in Alaska

Table2: The Recorded Long-Period Natural Oscillations of the Earth (NOE) [8] witch Practically Coinciding with them the natural Oscillations of the Sun (NOS) [7]

Date	Time of recording (local)	Period of natural oscillations Earth (seismic),min	Period of natural Oscillations of Sun [2]	Note (Mode)
26-27.V	18.07	14.9	14.93	P7
29-30.V	22.08	15.0	15.10	P6
30-31.V	19.07	15.0	15.1	P6
4-5.VI	20.07	spectrum		
5-6 .VI	21.06	17.0	17.17	P6
6-7 .VI	18.07	16.8	16.44	P5
18-19. VI	19.07	18.5	18.68	P5
19-20 .VI	22.08	18.0, 20.0	18.31,20.19	P4,p5
20-21 .VI	23.04	18.0,18.5	18.31,18.68	P4,p5
22-23 .VI	21.06	18.6	18.68	P5
25-26 .VI	18.06	18.5	18.68	P5
26-27 .VI	22.08	18.6	18.68	P5
27. VI	11.21	19.5	19.26	P4
2.VII	19.22	20.5	20.52	P4
9. VII	19.22	20.5	20.52	P4
16. VII	20.22	spectrum		
23-24 .VII	22.10	13.8	13.81	P6
24-25 .VII	21.07	14.3	14.38	P6
25. VII	10.17	14.8	14.93	P7
20-31. VII	21.23	17.0	17.17	P6
6-7.VIII	21.08	17.5	17.39	P5
13-14. VIII	19.23	18.5	18.68	P5
20-21. VIII	19.23	18.5	18.68	P5
28-29. VIII	20.07	-		
29-30. VIII	19.08	-		
24-25.IX	20.09	Noise		

long existence, it is possible to attract several mechanisms (versions) taking into account modern discoveries in nuclear physics [2-6]:

1. The oscillation spectrum of a nonlinear oscillator the Earth can be transformed into one or two mode modes of oscillations.
2. Through the effect of anomalous neutrino radioisotope absorption of neutrinos (HENI absorption) [2], the modulated flux of solar neutrinos affects the geological radioactive structures of the Earth and supports those vibrations excited by an earthquake that are close to the periods of solar oscillations.
3. The oscillation spectrum of a nonlinear oscillator of the sun can transform to a low-mode oscillation mode.
4. Features of pp. 1-3 determine the right, power part of the Duffing`s equation, and the transfer of wave energy to low frequencies of Earth's oscillations leads at least to the formation of a powerful seismic trigger of earthquakes or to the direct occurrence of an earthquake.
5. The modulated flux of solar neutrinos, like in the case of the hydrogen frequency standard, excites the upper layers of the atmosphere-the ionosphere, which is reflected in the KR index, and already through the atmospheric waves, or rather the buoyancy waves [17], further enhances the long-period oscillations of the Earth.

6. The effect of paragraph 2 supports the Earth's oscillations also through a modified mechanism of self-excitation and support of waves of seismic acoustic oscillations through seismic-emission and nuclear interactions according to Tsarev [18]: in the formed crack there is acceleration of charged particles and their interaction. For radioactive rocks, these radioactive particles interact with others, and as a result, nuclear reactions with a heat release are triggered for a short time, besides this simultaneously stimulates the HENR absorption also with a thermal effect. That is, the substance of the seismic wave compression phase receives additional energy, which amplifies the amplitude of wave oscillations according to the Rayleigh mechanism.

Thus, the Earth's wave field can be excited and / or maintained by absorbing the energy of the solar neutrino flux modulated on the periods of its own oscillations and the discovered HENRI effect. Experimentally, this was observed in 1975-1976, and is justified with regard to the effect of a modulated flux of solar neutrinos in 2013 [2, 6]. Observation of this effect for specialists who are proficient in techniques and experience with nonlinear seismic processes is experimentally quite simple and, therefore, one should expect its manifestation in the works of other researchers who still do not understand the role of the Sun [11, 12].

Some of them stand the works of prof. Lin`kov with co-workers, for example [19]. These publications can be based on the primary results of their observations, summarized in Table 3 with the first results of observations of the long-period oscillations of the Earth. (prof. Lin`kov and co-workers).

Table 3: Experimentally Recorded Seism- Gravitational (Long-Period) Waves of the Earth

Oscillations of the Earth			**Seismic-gravitational**		
Moda Period T1	T2	ÄT1/T2 100%	P1	Г2	ÄP1/P2 100%
OS3 35,61	35,56	U,14	51,5	52,3	1,5
OS4 25,78	25,15	2,44	52,8	53,3	0,9
1S3 17,73	17,81	0,39	53,8	54,2	0,7
OS6 16,04	15,90	0,87	55,2	55,1	0,2
2S2 15,25	15,27	0,13	56,3	56,2	0,2
1S4 14,20	14,25	0,04	58,2	57,9	0,5
2S3 13,40	13,36	0,30	59,2	59,1	0,2
1S5 12,15	12,21	0,49	60,8	61,2	0,7
OS9 10,57	10,50	0,66	63,7	64,8	1,7
2S6 9,91	9,94	0,30	6,8	68,2	0,6
1S8 9,26	9,29	0,32	72,0	71,0	1,4
2S7 8,93	8,90	0,33	77,0	76,0	1,3
			82,0	83,0	1,2
			86,7	86,7	0,0
			95,2	96,7	1,0
			103	104	1,0
			107	108	0,9
			126	127	0,8

In Table 3- P1, P2are periods of long-period waves that appeared immediately after the earthquake (P1) and without data on the earthquake (P2). To the purely solar periods of more than 65%, the following should be attributed: 55.05, 57.73; 61.88; 63.03; 72, 58; 76.83; 83.1; 95.38; 104.5; 107.7; 126.5; 127.3.

Comparing the data of P1 and P2 with the periods of the natural oscillations of the Sun, we see that more than half of the P1 and P2 periods in the 3 rd digit coincide with the solar ones, but given the publication time of 1987, the authors' understanding of the role of solar oscillations and the effect of neutrino fluxes or even of modulated gamma fluxes was naturally absent. Further such oscillations were defined as seismic - gravitational; their excitation was associated with deformations of the earth's crust. It was believed that they affect the atmosphere - in fact, as already noted, on the contrary, buoyancy waves could excite seismic [17] and not only - waves with solar periodicity can be excited in the ionosphere by the mechanism [20]. That is, having a good experimental base, the researchers adhered to a completely unsatisfactory model of their origin, which lowered the effectiveness of research. Nevertheless, their efforts have led to the fact that these waves are a powerful seismic genesis factor on the basis of which a reliable forecast of seismicity can be developed. Thus, the significant role of the Sun and solar processes in seismicity is indisputable, primarily for modulated neutrino fluxes and the ANRI effect. Also, probably, for the first time the same authors proposed a mechanism of occurrence of seismic gravitational waves due to deformations of the lithosphere, which, within the framework of Sec. 2.6 (see above) becomes quite real.

An interesting experimental material, similar to the data already discussed, is presented in the materials of the conference in Vladivostok [21-24]. Using long-base laser deform graphs, several groups of experimenters also recorded low-frequency deformation waves with periods that coincide with periods of solar oscillations, but did not rank them as seismic-gravitational waves. So the report [21] revealed the following solar periods (min.): 44.4; 41.6; 36.6; 27.5; 25.3; 24.5; 23.1; 21.75; 20.46; 19.6; 17.0; 16.04; 15.4; 1 74.1; 13.7; 13.4; 12.3; 11.9; 11.3; 10.8; 10.2. The report [22] also defined periods exceeding 1 hour (min.): 164.0; 147.0; 137.0; 133.3; 129.2; 111.0; 109.0; 99.8; 97.8; 91.2; 90.0; 84.6; 83.0; 74.9; 76.1; 72.5; 69.2; 68.0; 66.7; 64.4; 63.7; 60.4; 59.5. The most complete approach to the problem of long-period oscillations is given in [23-24]: the most stable periods of crustal oscillations (min.) Are identified: ~ 31; 57; 60; 66; 75; 83; 128; 160. This set corresponds to a set of proper oscillations of the Sun (min.): 30.93; 57.27; 61.11; 64.8; 76.8; 83.1; 128.1; 158.9. In addition to the periods of the above series, other solar periods of oscillations were observed (min.): 107.8; 142.2; 160- (the solar period, investigated by Academician Severny); as well as 104.5; 101.0; 83.9; 73.2; 67.4; 65.2; 57.5; 56.9; 31.33. At the same time, the spectrum of natural oscillations of the Earth was recorded. Observations were conducted in a calm seismic situation on the Earth (absence of appreciable earthquakes), which indicates the significant role of weak seismicity and the role of the Sun, more precisely, the ANRI effect. Unfortunately, the authors did not know about the existence of [7]. More recent results, but with complete disregard for the existence of solar-terrestrial relationships, can be seen in [11, 12], where the prof. Lin'kov model of cortical deformation and its features (actually due to the ANRI effect) are considered. Moreover, the found features of deformation of the crust can easily be explained by the existence of the ANRI effect. The disappearance of wave effects near the poles is due to a decrease in the density of the neutrino solar flux per unit volume of the radioactive material of the crustal rocks of the Earth. Different phases of deformed sections of the earth's crust are determined by the features of the manifestation of the ANRI effect: the deformation of the crustal rock massif with the zenith location of the Sun under the energy influence of the flux of solar neutrinos and muons occurs from the outer side facing the day surface. In the antipode zone, the same structures are exposed only to the neutrino flux on the reverse side of the day surface. In both cases, the emergence of so-called seismic gravity waves, but only in the ant phase.

Present Time Research

Taking into account the principal importance of the above materials, additional investigations of the wave fields of powerful seismic events of recent years, for example, the earthquake in Chile on February 27, 2010, when there was already a developed seismic network equipped with perfect geophones.

Recordings of the Chilean event of high energy were used on different seismic devices of seismic stations (s / st.) In the USA, remote from the epicenter of the event in sequence: PAYG, 121A, BMO, CAST. An example of a seismogram is Figure 5.

Table 4 shows the results of searching for significant spectral periods during the processing of receiver seismograms in c / st. PAYG, 121A, BMO, CAST and data of ultralow frequency sensor of station 121A in comparison with the periods of natural oscillations of the Sun (NOS) and natural oscillations of the Earth (NOE). An example of the spectrum is Figure 6.

Comparison of Tables 1 and Table 1 results in a multiple coincidence of the periodicity of the Sun's own oscillations (SOO) and the Earth (NOE). Further, the changes in the Earth's oscillations in time were analyzed (Figure 7), that is, the process when the amplitudes of the spectral peaks can vary in different ways, depending not only on damping, but also on other causes and interactions. So in Figure 7, the main tone of the RMS is selected, the mode is $_0S_0$ (20.46 min.) [10] or 20.52 m. SOO (Table 1), which is considered anomalously good in seismology.

The behavior of this spectrum in time is of interest. For this, the process of the existence of a wave field in time was considered in the form of a graph of spectral-temporal analysis (STA), see Figure 8.

Figure 8 also shows the main tone of the NOE -20.46 min. (the $_0S_0$ mode for the Earth and 20.52 min for the Sun).

In Figure 9, after the month, the main NOE is also allocated - 20.46 min., the remaining periodicity faded after a week.

Figure 10 shows the frequency of the SOO, where pulsations of the quality factor of periodicity are seen. Probably, this is the pumping of solar energy by the mechanism of the interaction of the neutrino flux and geological radioactive structures (ANRI effect) pulsating during periods of the Sun's own oscillations (20.19, 29.4 min.).

Figure 5: Seismogram of the Earthquake in Chile on 27.02.2010. Time: 2010-02-27 06:34; Long. 72.90 ° W Lat. 36. 12 ° S; Magn. 8.8; Depth 22.9 km

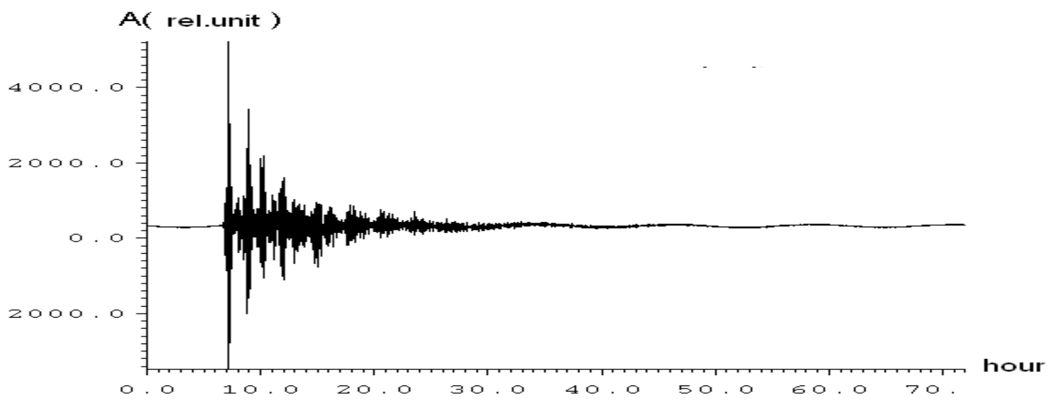


Figure 6: The Spectrum of Natural Oscillations of the Earth (NOE) Excited by the Chilean Earthquake According to c /st. 121UNZ

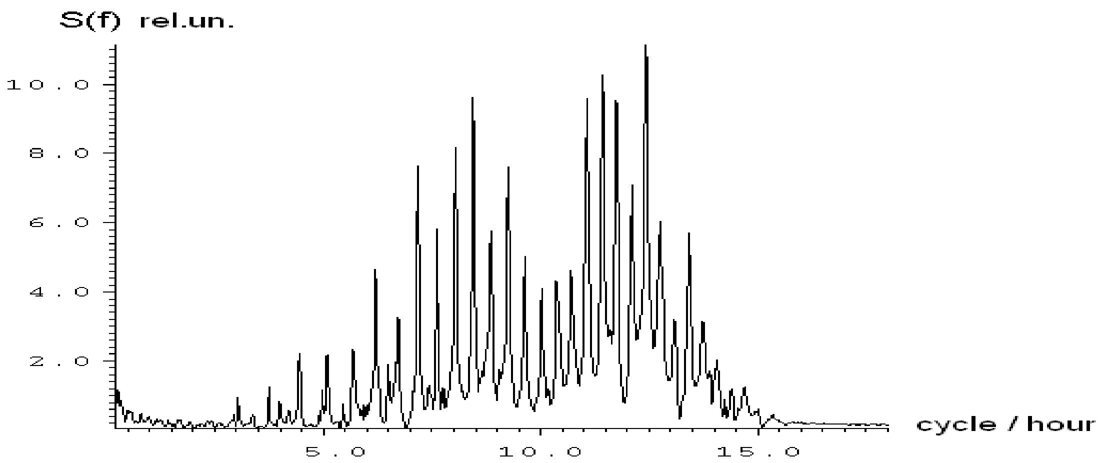


Table 4: Authentic Periods of NOE and NOS, Obtained during the Analysis of the Seismograms of the Chilean Earthquake (Figure 5)

N	T(min) PAYG	T(min) 121A,	T(min) BMO,	T(min) CAST.	T(min) 121UNZ	T(min) NOS	Mode form	T(min) NOE	Mode. NOE
1					20.2	20.19	p5, l0	21.017	0S0
2					17.77	17.39	p5, l2	17.80	1S3,2S2
3					16.1	16.04	p6, l1	16.1	0S6
4					15.1	15.1	p6, l2	15.1	3S2
5					14.28	14.38	p6, l3	14.21	1S4
6					13.55	13.35	p7, l2	13.54	0S7
7					11.77	11.86	p9, l0	11.82	0S8
8					10.6	10.78	p10, l0	10.46	0S9
9					9.67	9.65	p10, l3	9.69	0S10
10					9.25	9.21	p11, l2	9.26	1S8
11					8.94	8.94	p11, l3	8.90	0S11
12					8.37	8.32	p12, l3	8.35	0S12
13					7.88	7.78	p13, l3	7.86	0S13
14			7.4		7.45	7.45	p15, l0	7.48	0S14
15	7.1	7.06		7.2	7.1	7.15	p14, l4	7.17	0S15
16					6.77	6.75	p15, l4	6.77	0S16
17		6.44			6.49	6.47	p17, l1	6.48	0S17
18	6.23		6.23	6.23	6.23	6.29	p18, l0	6.23	0S18
19	5.96	5.98			5.99	5.98	p19, l0	6.01	0S19
20				5.76	5.8	5.84	p19, l1	5.77	0S20
21			5.42		5.6	5.6	p19, l3	5.6	0S21
22					5.25	5.25	P20, l4	5.28	0S23
23	5.1	5.09	5.11	5.095	5.11			5.11	0S24
24	4.96				4.96			4.99	0S25
25		4.82	4.82	4.84	4.82			4.82	0S26
26					4.71			4.70	0S27

Figure 7: Spectrum of Natural Oscillations of the Earth after 4 days from the Earthquake in Chile

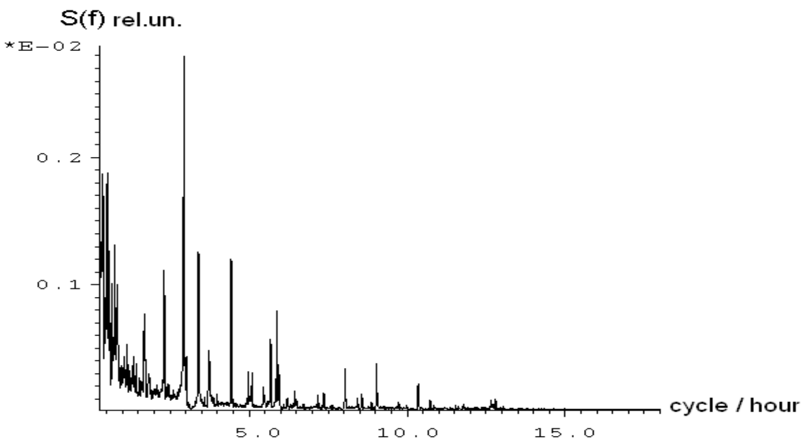


Figure 8: There is Spectral Time Analysis (STA) after 4 days from the Earthquake in Chile (a using 25% of the window)

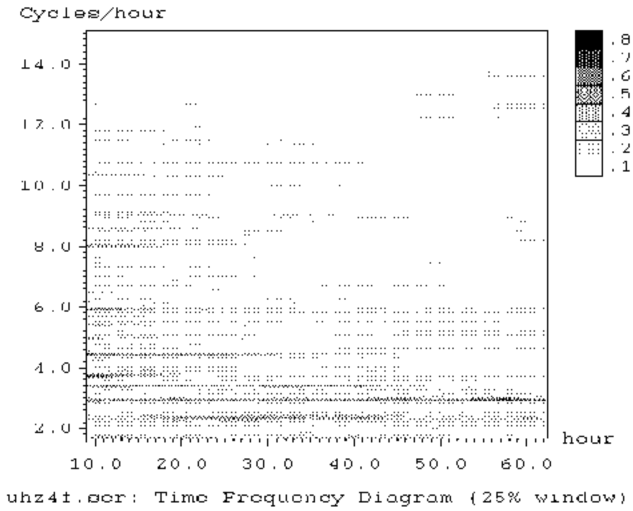


Figure 9: STA is After a Month from the Earthquake in Chile (25% window)

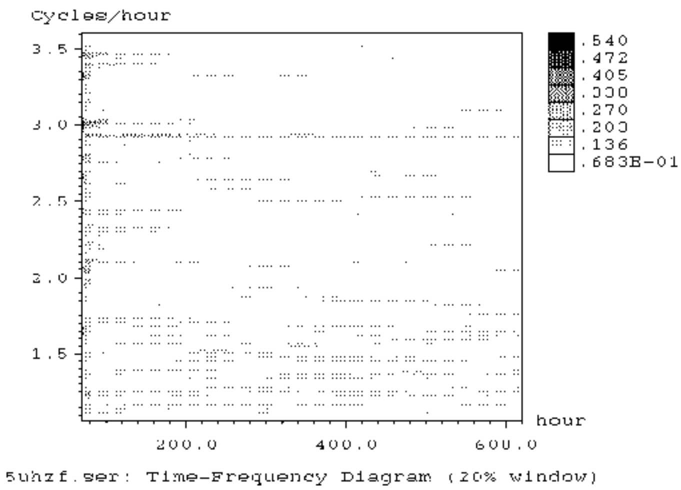
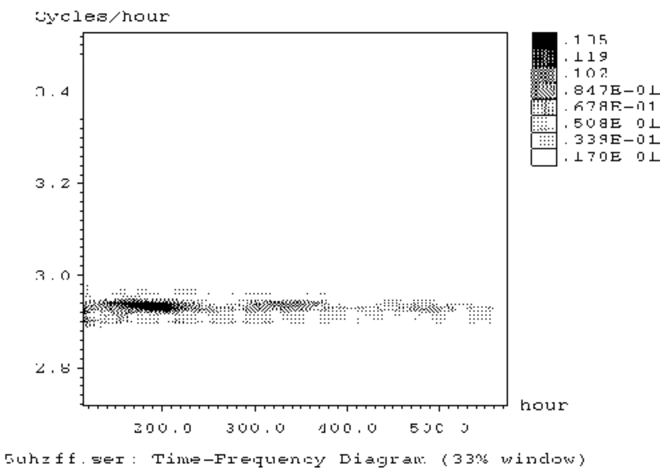


Figure 10: The 29.4 Minute Periodicity of SOO (mode p2, l3)



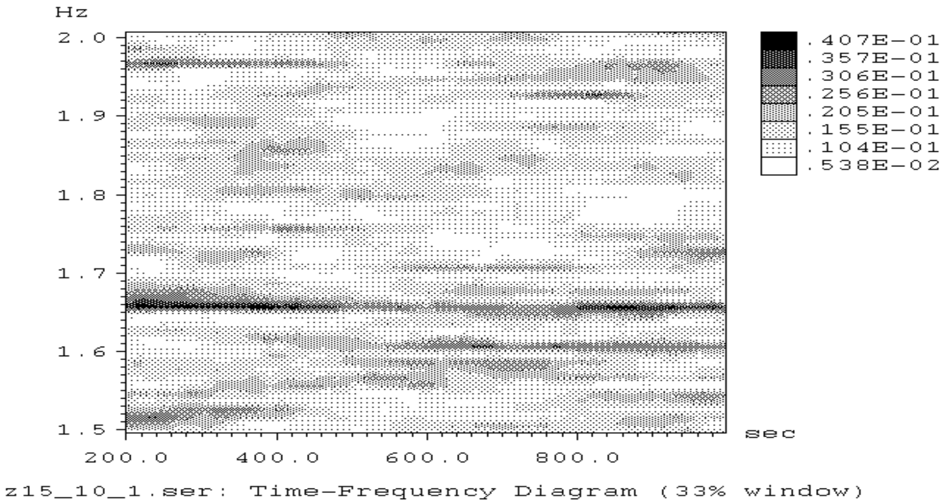
There are Neutrino Solar Flux, Solar Tides and Seismic Acoustic Noise of the Earth [25]

Strange as it may seem, these processes are logically connected with the long-period oscillations of the Earth, the Moon and the Sun. Indeed, for example, the solar tide on the Earth at its maximum coincides or is close to the maximum flux density of solar neutrinos passing through the zone of the Earth's zenith illumination by the Sun, at the same time the region experiences maximum tidal stresses, usually causing seismic acoustic feedback in a deformable medium. Therefore, the main direction of research concerned the search and study of the structure of the astrophysical component of seismic emission and noise. At the same time, an important distinctive feature of seismic acoustic emission and noise is that, under the "weakness" of the manifestation of their physical properties and noise-like characteristics, other processes, hidden in their geophysical, physical and astrophysical essence, are hidden. The most interesting is the newest effect - neutrino fluxes and their interaction with radioactive structures and, accordingly, their noise response. The study of noise records, as well as the review and retrospective processing of data from earlier observations, indicate the existence of a seismic response of the Moon and the Earth to modulated neutrino fluxes and pulsed neutrino signals from a supernova outburst, pulsars, and processes on the Sun. A stable correlation between the background of seismic acoustic emission and the solar tidal component is recorded, which requires taking into account the interaction of the solar neutrino flux with the radioactive elements of the Earth's geological structures. Researchers are only now coming to understand the complex relationship between terrestrial processes and the cosmos, the role of neutrino fluxes. Therefore, the main direction of research concerned the search and study of the structure of the astrophysical component of seismic emission and noise. Wherein an important feature of seismic acoustic emission and noise are that the "weakness" of the manifestations of their physical properties and characteristics of noise like other geophysical, physical and astronomical impotent processes are hidden. The greatest interest is the most new effect there is neutrino fluxes and their interaction with radioactive structures and thus their response to noise. The study of noise records, as well as review and retrospective data processing earlier observations indicate the existence of the seismic response of the Earth and the Moon on modulated neutrino fluxes and pulsed neutrino signal from supernova, pulsars, the processes inside in the Sun. There is recorded strong correlation between the background seismic acoustic emission and solar tidal component that requires taking into account the interaction of the solar neutrino flux with the radioactive elements of geological structures of the Earth. Researchers have only now come to understand the complex interplay of earth processes and space, the role of the neutrino fluxes.

To date, statistical methods for analyzing noise, filtering their anthropogenic and atmospheric seismic components have been developed. There is a similar spectral composition of noise on land and on the ocean floor; the main regularities of the spectra are preserved. The connection of high-frequency noise with the processes of rock destruction, that is, the existence of seismic acoustic emission, is proved. The accumulation of information and / or problems by the nature and properties of regional noise leads to their study as an independent phenomenon. One of the new directions of their study is the astrophysical component of seismic noise and emission. This direction for the Earth arose earlier, but did not unfold really for many reasons [26, 27]. It went better on the Moon (see below). The astrophysical periodicity of the lunar seismicity, isolated with the help of statistical analysis of the Nakamura Catalog, was first produced from a low-frequency part of the spectrum by a rich material. The total number of reliable peaks is about 35, of which more than 25 coincide with the periods and / or half-periods of binary stellar systems [28] and indicates that this part of the spectrum has areas that are inherently related to processes at astrophysical objects (multiple star systems). Since the set of wave processes in a nonlinear medium tends to be randomized and expand the boundaries up and down in frequency, this, in the final analysis, can additionally lead to the emergence of a background continuous component of this same part of the spectrum. Recent studies of the high-frequency part of the seismic noise of the Moon revealed a significant number of peaks, even in a narrow frequency region, coinciding in the 2nd, 3rd and 4th signs with pulsar frequencies [29]. Altogether, about 40 reliable spectral peaks were recorded. A narrow seismic peak at a frequency of 1.667 Hz corresponding to the pulsar CP 1133 was studied in more detail, its chaotization was observed (Figure 11) [29].

As in other STAs in Fig. 11, there are record segments at frequencies of 1, 52-1.54; 1.55-1.58; 1, 62-1, 61; 1.72-1.71-1.73; 1.75-1.73; 1, 89; 1, 93-1.97 Hz, which are a strong sign of the chaos of the wave field. As is known, nonlinear wave effects with increasing characteristic

Figure 11: STA of Z-Components for August 10, 1972



frequencies of processes proceed more intensively, which stimulates the appearance of a background continuous component of seismic noise. The independent growth of the background noise component causes a weak, but relatively frequent seismicity of the Moon as its own, deep, and tidal nature. Additional sources of growth of the general backgrounds are solar flares and pulsations of the solar wind, gas-dust flows [30, 31]. This justifies the possibility of presenting Catalog Nakamura as a digital continuous wave seismic recording process on the moon, like a similar array of regional recording high-frequency seismic noise modulated by a variety of deformation effects. Thus, a transition is made from corpuscular dust astronomy, which is based on the principle of recording and emitting single events (impact of a particle on the screen), and studying the cooperative-wave response from the total effect of particles on artificial or natural (for example, the Moon) antenna. That is, the concept of wave dust astronomy is developing. Thus, the structure of the seismic noise of the Moon is mainly form astrophysical sources, education seismic response mechanism is diverse, but it is beyond the scope of this paper. We indicate only the most recent effect-neutrino fluxes and their interaction with radioactive structures. Experiments to register modulated neutrino fluxes from astrophysical sources, as well as review and retrospective processing of data from earlier observations, indicate the seismic response of the Moon and Earth to modulated neutrino fluxes and pulsed neutrino signals from supernova outburst, pulsars, and processes on the Sun. At the same time the analysis of retro results as well as future studies are possible only on the basis of discovery [2, 3]. This justifies the possibility of presenting Catalog Nakamura as a digital continuous wave seismic recording process on the moon, like a similar array of regional recording high-frequency seismic noise modulated by a variety of deformation effects. Consider the components of earth's seismic noise. Probably the first attempt to find the cosmic component in the earth's seismic noise and theoretically and experimentally belongs to J. Weber [32]. Further development went on searching for seismic signals at strictly determined frequencies from pulsars as sources of gravitational waves [8, 26-35]. At the same time, the conditions for isolating seismic disturbances were strictly observed, ignoring which led to the false results described in [33].

Gravitational wave interpretation, unfortunately, was also adhered to by experimental authors who registered seismic spectral peaks at pulsar frequencies and their critics of theorists. The arguments of the theorists were so weighty that apart from the obvious evidence that there was no possibility of experimental recording of the gravitational-wave action of the pulsar radiation on the earth's crust as an antenna, the existence of registered reliable seismic spectral peaks at the pulsar rotation frequency was rejected. And there were administrative bans or, even worse, public "scientific" persecution. However, the general development of wave physics, the study of optic acoustic effects, allowed us to consider the γ- and re-pulsed components of the solar flare, similar to those of some pulsars, also affecting the daytime surface of the Moon and the Earth (for the Earth, the effect occurs through the atmosphere). In addition to the wave component of the action on the surface (γ, Re and photo-radiation), it is necessary to take into account corpuscular: gas-dust flows, powerful solar flares are accompanied by a seismic-acoustic response of the moon's lithosphere, and affect the Earth's atmosphere. Thus, a number of effective mechanisms for the impact of astrophysical sources and processes on the celestial body, which completely admit a seismic response in the form of a pulse or a spectral peak, and formed a component of background seismic noise, and justifying in the new physical model an earlier recording of peaks from pulsars [33-35]]. Registration on Earth of this type of noise requires careful selection of the recording location. The most acceptable zone was the Egyptian pyramids, especially the pyramids of Dahshur`s place, a collection of articles devoted to this [36]. The processing of materials led to numerous conclusions:

1. Seismic noise of the Snowfall pyramid is non-linear in nature and its structure has an increased sensitivity to external influences.
2. Different parts of the spectrum of seismic noise are inherent in the physical mechanisms of their formation.
3. The low-frequency part of the spectrum reflects the cooperative processes of interaction and interaction of seismic noise energy of the pyramid itself and the environment and the outer cosmic impact of most known pulsars.
4. The isolated peaks of the higher-frequency part of the seismic noise spectrum, primarily at a frequency of 17 Hz, are also determined by several energy mechanisms, and an analysis of this peak structure reveals the effect of the cosmic radiation of the pulsar PSR 1913 + 16 and the technogenic component at (= 50 Hz).
5. It is necessary to search for the cosmic impact in seismic noise not only by the coincidence of the frequency of spectral noise peaks with pulsar frequencies, but by observation and proof of the existence of a nonlinear nature of seismic noise, the physical mechanisms of their existence, and the impact of an external space source on these noises. The latter means that the existing multiple effecting of radiation from astrophysical sources, and especially neutrino fluxes from the Sun, is accompanied by the appearance of a common noise emission noise in the upper crust, whose root cause is astrophysical. Moreover, modulated fluxes of solar neutrinos generate on the Earth forced oscillations on the periods of the Sun's own oscillations, which, when evolving, can provoke earthquakes and increase the background level of seismic emission [2, 3.23; 24; 37]. The role of the astrophysical component of seismic emission and noise was noticeably manifested in a special study on the search for an energy noise model [38]. According to the results of [38] there is no stable correlation between the background of seismic acoustic emission and the lunar tidal component, but there is a stable correlation with the solar component, which is paradoxical. Such a contradiction is eliminated by taking into account the interaction of the solar neutrino flux with the radioactive elements of the geological structures of the Earth, previously seen in the excitation of oscillations of the Earth forced on the periods of the solar oscillations. It would seem that this interaction should not depend on the phase of the solar tide and when averaging is always uniform. But if we take into account the effect of amplifying the emission response by the stressed state of the medium (the effect of the tide) then the existence of a strong and constantly observable correlation is entirely logical [39]. As for the amplitude variations of the correlation coefficient, this is due to a kind of directional diagram of extended geological structures with radioactive elements in relation to the solar neutrino flux. Similar processes were also observed in the analysis of seismic processes during supernova outbursts [40, 41]. Since the noticeable role of tidal processes as well as long-period Earth oscillations is generally accepted, the discovered features of the astrophysical component of seismic emission and noise introduce into the problem of seismic prediction and astrophysical neutrino fluxes. Conclusions: in fact, researchers are only now approaching the understanding of the complex interconnection of terrestrial processes and space, the role of neutrino fluxes.

The Long- Time Periods of the Lunar Oscillations

In fact, it is customary to examine the Moon's own and low-frequency vibrations as a separate block, which we will follow. Outgoing material for describing the lunar oscillations, coinciding with the periods of solar oscillations, can be the results of the study of the Moon by seismic methods [42, 43]. Thus, significant, observed periodicity (P> 0.95) of the envelope records of signals from cosmic impact at Apollo stations on the 133X component (1972, 133 days from the beginning of the year) contain spectral peaks (min.): 29.4; 25.8, 25.76; 22.9; 20.5; 20.6; 14.7; 12.9; 8.96; 8.6; 7.36; 6.4; 5.7; 5.15. The considered periodicity was selected in accordance with Table 1, therefore identification of the obtained periods here and in other Tables, short-term periodic signals does not take into account. At the same time, in the region of long periods, the majority of signals (~ 80%) in the second, third sign coincide with the periods of solar oscillations (Table 1).

Similar periodicity, but at 133 Y-component (min.): 29.4; 25.8; 17.18; 15.85; 12.9; 10.3; 8.6; 8.24; 7.37; 6.4; 5.7. The dominance of the periodicities of solar oscillations is also observed. Similar periodicity and regularities are observed further, but on the 133Z-component (min.): 29.4; 18.7, 14.7; 13.2; 12.5; 11.8; 9.16; 8.24; 8.2; 7.1; 6.76; 5.4. Similar periodicity, but at 199X (event on 199 days from the beginning of 1972) - component (min.): 68.7; 29.4; 25.8; 18.7; 14.7; 13.7; 12.9; 11.4; 10.8; 9.4; 8.6; 8.24; 8.2; 7.9; 7.1; 6.9; 6.7; 6.06; 5.6. Similar periodicity, but on the 199Y-component (min.): 29.4; 25.8; 20.6; 17.2; 14.7; 13.7; 12.1; 10.3; 8.4; 7.9; 6.4; 6.2; 5.9; 5.8. Also for 199Z (min.): 29.4; 25.8; 22.9; 18.7; 17.2; 15.9; 13.7; 11.1; 10.8; 9.6; 9.4; 8.96; 8.7; 8.6; 8.4; 8.2; 7.4; 6.9; 6.64; 6.4; 6.1; 5.7; 5.5. Significant periodicity (P> 0.95) of the envelopes of the lunar seismograms of cosmic impact in c / st. expeditions Apollo, 1972, 133, XYZ (min.): 25.8; 21.7; 20.6; 18.7; 17.9; 15.3; 12.9; 11.1; 10.3; 9.8; 8.8; 8.2; 7.1; 6.2; 5.7; 5.6; 5.2. Too, but for 199, XYZ (minutes): 20.6; 19.6; 18.7; 16.5; 13.8; 12.5; 11.4; 9.6; 8.2; 7.9; 7.8; 7.6; 7.0; 6.7; 6.1; 5.9.

For more details on the method of statistical analysis of lunar seismograms and obtaining the indicated periodicity, see [9]. We also note that the solar periodicity given above is obtained from the data of impact seismograms, that is, the manifestation of the neutrino solar flux in the form of the HENRI effect was limited in time, but rather effectively. In addition to the data given, long-period oscillations coinciding in time with seismic-gravitational waves on the Earth were observed, which excludes tectonic and atmospheric excitation mechanisms. At the same time, the role of the modulated solar wind and solar flares increases [9].

There appeared also a somewhat isolated direction of investigation of the higher-frequency wave fields of the Moon directly connected with cosmic neutrinos from pulsars [44, 45], emitting their significant fluxes [46].

Unaddressed existence of extraterrestrial sources of high energy neutrinos was discovered in 2013y. But the most promising addition to supernovae includes objects such as pulsars and closes multiple systems. Relying mainly on its own experience in the search and registration of the seismic response at frequencies of pulsars and close binary stars on Earth and the Moon and using the results to detect solar neutrinos work on the study of modulated neutrino fluxes were continued.

The study of the spectra of lunar seismic noise revealed a number of significant spectral peaks that match the frequency to 3-4 significant figures with the frequencies of sending energy pulses from pulsars. At the same time availability of registration of seismic peaks and their characteristics are strongly associated with the shape and depth of the radioactive geological structures of the lithosphere of the Moon. That is the energy of interaction modulated beam of neutrinos from the pulsar radioactive elements Moon differently converted into energy of seismic noise. There have also been recorded seismic peaks well coincides with the period of close binary stars. Some of the peaks previously were registered not only as a purely seismic frequency, but as the frequency inherent to radioactive laboratory sources. It is further confirms their astrophysical neutrino origin and similar search becomes the part of high-energy neutrino astronomy.

Volcanoes and the Sun, ANRI – Effect

Volcanoes - the most “young object” of research in the field of solar-terrestrial geophysics, has a successful beginning, and at such a special object as the caldera of the Yellowstone volcano. Monitoring of the caldera is provided by all the necessary geophysical equipment, many types of observations have a continuous character. This made it possible to study in some detail its wave fields and local seismicity [47, 48]. Moreover, as an unexpected gift were the discovery of its solar-terrestrial connections and the role of the ANRI-effect.

Figure 12, Figure 13 shows the data of the Z-components of the GPS variation data in the volcano caldera for the last 15 years and their spectra.

The main peak in the 11.2-year spectrum coincides exactly with the period of solar activity. This suggests that the explosion of a volcano is most likely at the maximum of solar activity, and such a strong role of solar activity is manifested through the ANRI-effect. Further research for the volcano search should take into account the discovered relationship.

Volcanoes and Seismic Waves - Search for Interactions

The seismic response of large volcanoes to the powerful wave action from the earthquake on the island was considered of Sumatra (December 26, 2000; the magnitude of M ~ 9). The reaction (seismograms) of volcanoes on the islands of Hawaii, Santorin, Tahiti and Tristan de Cunha were analyzed by comparing their

Figure 12: There is Long-Term Recording of GPS Variations on the Yellowstone Volcano Caldera

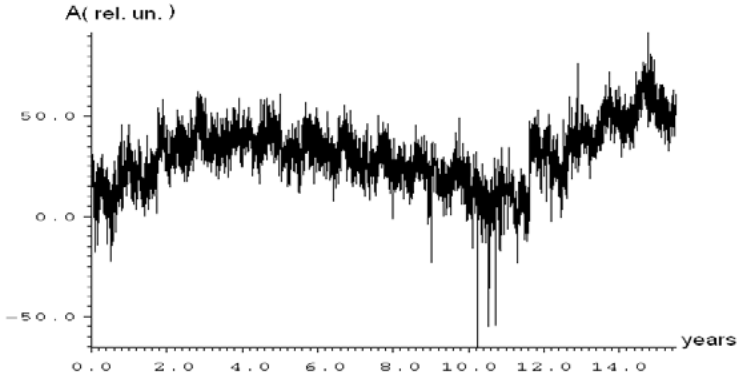
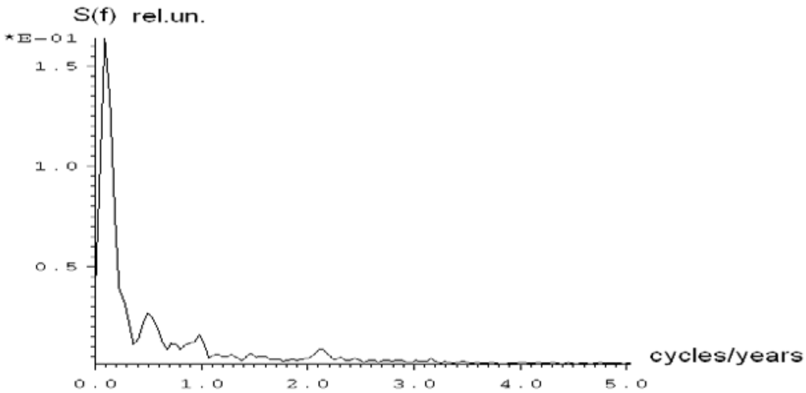


Figure 13: Data of Spectrum in Figure 11. The Peak for 11.2 years Dominates



seismograms with a seismogram obtained at a US platform station. For efficiency, the spectra of earthquake records in Sumatra and on volcanoes with spectra of US seismic stations were compared. For the beginning, spectra of events were determined at the US seismic station, and then on volcanoes (Figure 14).

This "reference" spectrum is further used for statistical analysis of all events for volcanoes on all islands.

When considering the spectra (Figure 14), only on. Santorin, in addition to recording a powerful earthquake, a long response of the entire structure of the volcano across the entire spectrum appears (Figure 14a), as well as in the USA, a powerful high-frequency spectrum from regional structures is superimposed on the rather weak spectrum of the event (Figure 13), which is typical for seismically active regions .

To study the response of the volcano to seismic action, the seismogram spectra were compared on the islands (Figure 14b, Figure 14c, Figure 14d) with the earthquake seismogram spectrum (Figure 14a). To do this, they received 1% of the sliding correlation function (FGC) a day before the seismic event, the event itself, 5 and 15 days after the event for each island (Figure 15a, Figure 15b Figure 15c, Figure 15d).

Attention is drawn to the significant correlation between the activity of the volcano in the Hawaiian Islands and the seismic record at the station in the United States prior to the earthquake on I. Sumatra can be interpreted as the existence of global geophysical connections of the activities of various geophysical objects regardless of specific events. A certain strong correlation, regardless of the current time, is observed in certain frequency bands (from 1 to 5).

Similar processing procedures were carried out and according to the data of the volcanoes Santorin, the islands of Tahiti and Tristan de Cunha.

In contrast to the volcano on the Hawaiian Islands the seismic activity of the volcano on I. Santorin 1 day before the earthquake strongly and in a wide frequency range correlates with the response of the seismic station in the US, which is promising for further study. And this correlation is partly destroyed at the time of the earthquake, but then again observed throughout the spectrum with growth after 15 days.

Before the event in Sumatra seismic communication of I. Tahiti correlates with the seismic state near the US seismic station weakly and only in a narrow high-frequency range. However, this connection is significantly strengthened after the earthquake and increases in time within 15 days. Correlation relationship of seismicity of the volcano on the island Tristan de Cunha with seismicity in the United States both before the earthquake and after is observed throughout the spectrum, somewhat falling only at the moment of the event. The above analysis proved the existence (activation) of the response of most volcanoes to the wave action from a powerful earthquake, which was expressed in a constant correlation relationship. Since both the activity of volcanoes and simply the Earth's wave fields contain a solar energy component largely determined by the ANRI absorption (see above), then both volcanism and seismicity, including wave fields, are also elements of the Earth's heat engine. Therefore, a more specific study of such an object requires a separate examination of the thermal fields of the Earth and their connection with the ANRI effect.

Figure 14a: Spectrum of the Seismic Record of the Seismic Station LTL LHZ (USA) - Lat.30.5374, Long.-90.766 from the Earthquake on about. Sumatra, (M ~ 9)

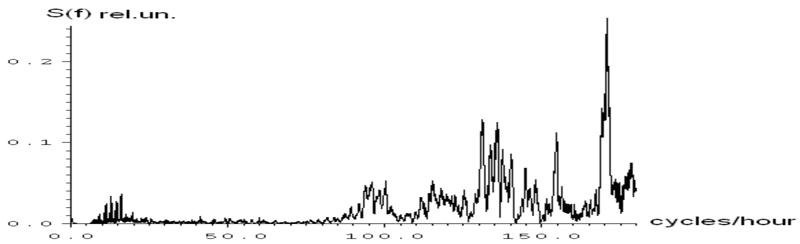


Figure 14b: The Spectrum of the Seismogram of the Seismic Station in the Hawaiian Islands (Hawaii, USA - Lat.21.42, Long -158.0112) from the Wave Impact of the Earthquake on Sumatra, (M ~ 9)

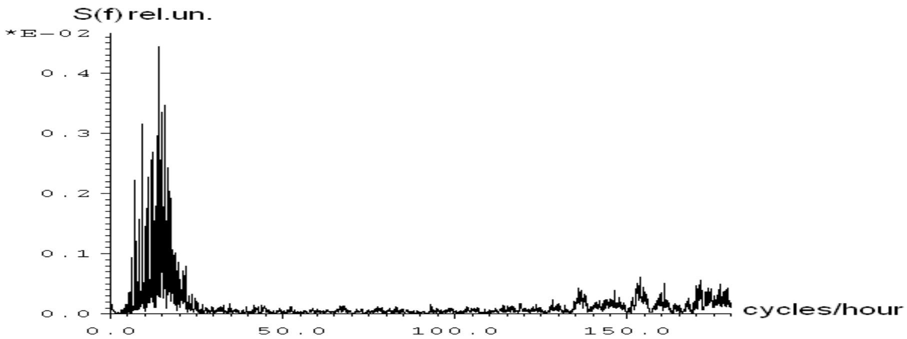


Figure 14c: Spectrum of the Seismogram on the Island of Santorin (SANT 26.12.2004 Lat. 36.370998, Long 25.459) from the Earthquake in Sumatra, (M ~9)

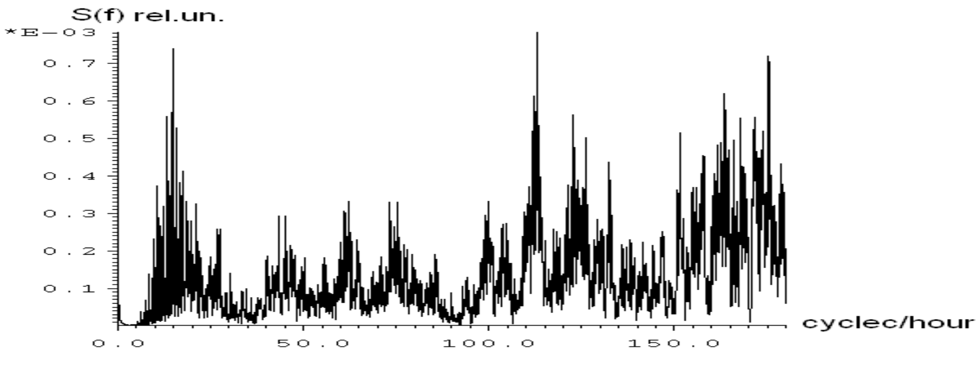


Figure 14d: Spectrum of Seismogram for the Seismic Station on the Island of Tahiti (TAHITI - Lat.-17.569, Long -149.576) from the Earthquake in Sumatra, (M ~ 9)

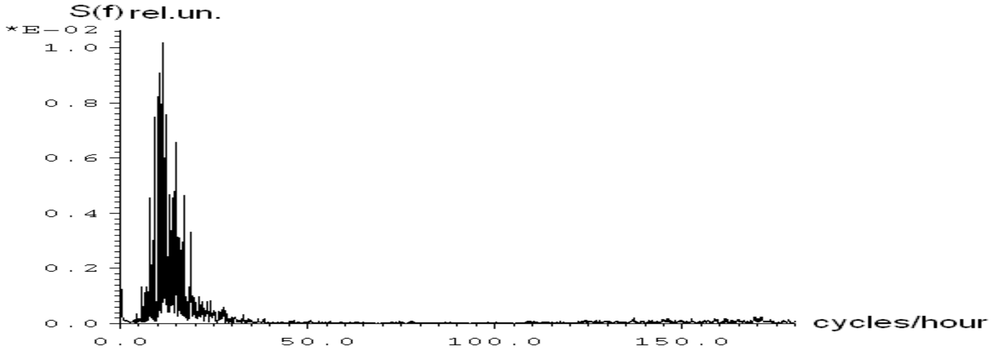


Figure 14e: The Seismogram Spectrum of the Seismic Station on the of Tristan de Cunha Island (TRIS 26.12.2004-Lat. -37.0681, Long -12.3152) from the Earthquake at Sumatra (M ~9)

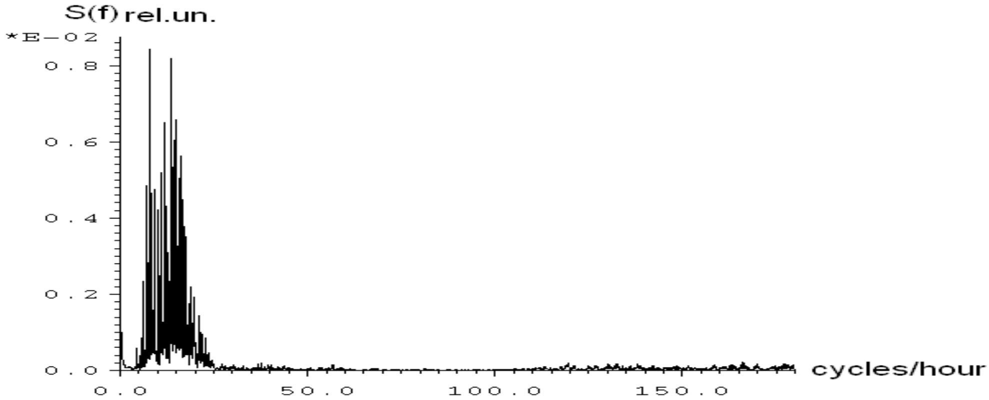


Figure 15A: Function of Sliding Correlation (FSC) 1 day before the Seismic Event in the Hawaiian Islands

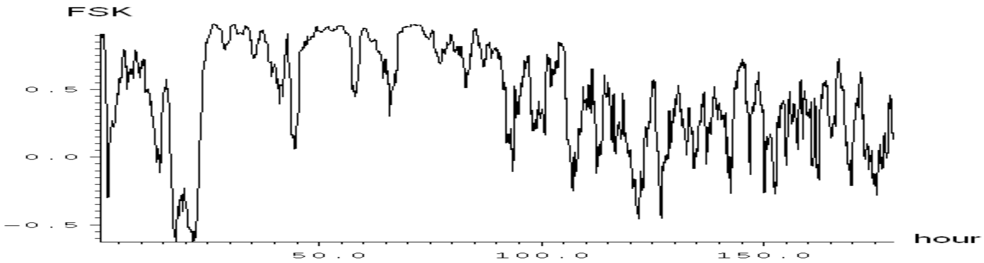


Figure 15B: FSC at the Time of the Seismic Event in the Hawaiian Islands

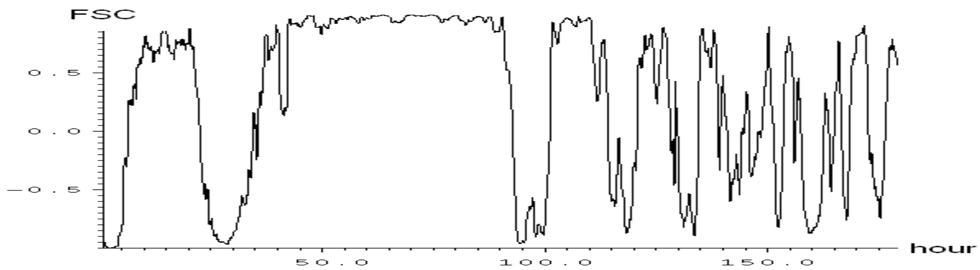


Figure 15C: FSC in 5 Days after the Seismic Event in the Hawaiian Islands

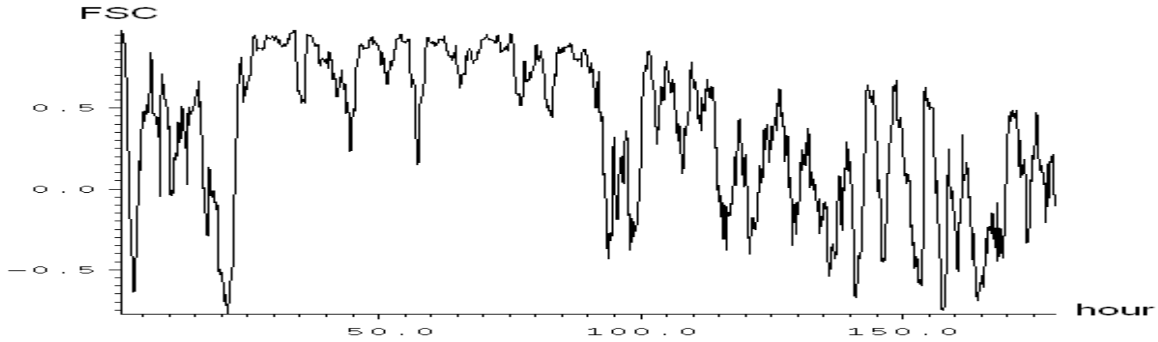
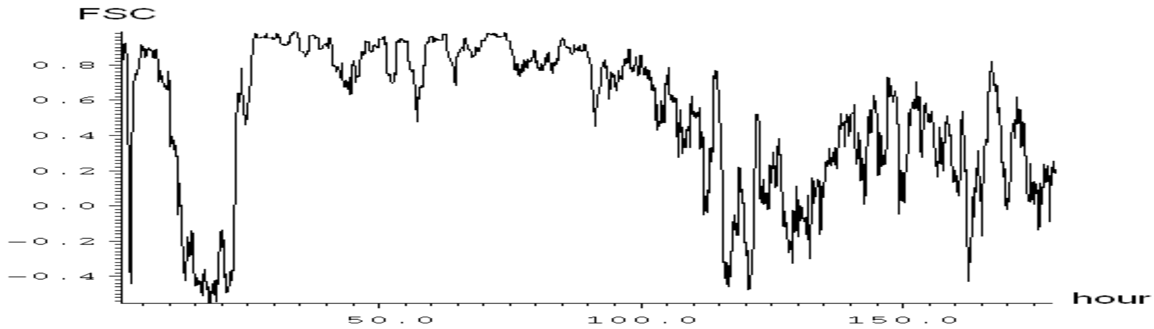


Figure 15D: FSC in 15 days After the Seismic Event in the Hawaiian Islands



The Power of the Volcano Explosive Eruption (New Model)

Some mechanisms that lead to an explosive eruption are already known: impulsive degassing of magma in a volcanic channel, plugs in the channel, leading to increased pressure in the cone channel, etc. In addition, it is necessary to add new physical processes that are also capable of pulse-generating energy and / or supporting high temperature in the volcanic chamber [49, 50]. To a greater or lesser extent, research related to this problem is well known [2-6, 18, 20, 46]. Quite obviously, there are large-scale cavitations processes both in magmatic chambers and in a volcanic channel with a wide variety of chemical elements of the medium [51, 52]. It should be expected that in the active stage of the volcano there will be three-dimensional collapsing cavities with P, T-parameters (P-pressure in the cavity, T-temperature), providing the launch of nuclear (thermonuclear) reactions [49]. As is known, in simple laboratory conditions, in water P, T - the parameters approximately reach 10^5 atm., 10^{4-5} K^o, respectively. Taking into account that the primary substance (magma) already has a temperature of ~ 1200oC and is under a geostatic pressure of ~ 10^{2-3} atm, the start of DD reactions is quite possible, and the discovery in igneous diamonds confirms the existence in magmatic chambers of conditions allowing, in the presence of magma deuterium, the process of thermonuclear fusion (similar to Sono - Fusion are Volcano Magma-Fusion). Therefore, one of the signs of an explosive eruption is intense wave processes in magmatic chambers and volcanic canal. The resulting shock waves destroy the volcanic cone, but also contribute to the appearance of diamonds. Thus, in the energy of the explosive eruption, there is a contribution from the processes of the Volcano - Magma - Fusion. In the cavitations zones of magmatic chambers, nuclear disintegrations of a new type are possible. It is likely that there is an energy release involving low-energy nuclear reactions, the study of which is a new page in nuclear physics [53-57]. Studies of the possibility and methods of influencing the decay rate of radioactive elements are Shadrin`s interesting; the state of titanium foil at electric discharge. There are known works on the successful creation and development of nickel-hydrogen thermal generators that produce energy without radiation. Thus, magmatic chambers of active volcanoes can represent a prototype of future reactors based on low-energy nuclear reactions, and the role of solar neutrino fluxes and muons with regard to the ANRI effect will only increase. Moreover, it is quite obvious that for geochemists and volcanologists the main task should be the creation of an experimental base for studies of reactions in magmatic chambers and a change in the elemental composition of magma for organizing low-energy nuclear reactions for the production of additional thermal energy and rare earth elements.

Earth and Neutrino Fluxes of Astrophysical Nature as Retrospectives for the First Stage of the Search Gravitational Waves

Such studies, especially taking into account the ANRI effect, may well become, despite the previous novelty, quite acceptable in contrast to the recent "registration" of gravitational waves [58], where for the sake of sensation the elementary requirements for seismic isolation of the device developed earlier are ignored [59]. Since effective seismic isolation is an indispensable element for many modern fundamental researches, let us briefly describe the essence [59]. The structure of [59] with the analysis of experimental studies of this fundamental orientation as an experimental registration of gravitational waves cannot be simple and disintegrates into blocks: geophysical and astrophysical components or characteristic of gravitational radiation. The geophysical section of the article are considered active seismic isolation problems installing mirrors LIGO, since there are quite a perfect isolation is only for hanging mirrors and only for one coordinate offset. While seismic effects generally have 6 – component, therefore possible interaction of various components, the useful signal may be seismic, gravity instead origin. Accordingly, there are selected and evaluated according to field work and field seismic signals. In addition, other hazardous seismic interference can be synchronous with the response from the gravitational radiation γ - flash. Astrophysical problems in the mechanism of gravitational radiation pulse are too analyzed.

Since, according to Ref. [45], pulsars are powerful sources of neutrino fluxes modulated at their rotation frequency, then, considering the many advantages of the moon as a neutrino flux detector, lunar seismograms at pulsar frequencies have been experimentally observed [42]. The history of registration of astrophysical neutrino fluxes on the Earth is more complex and with tragic elements [43, 44], and initially, as it now becomes clear, was still deeply intertwined with the problem of gravitational waves within the framework of the general theory of relativity(GTR). Let's consider the most general representations.

Graviton and Neutrino are Future Research

Both particles related to leptons are quite different, but they are united by the most important factor-the capture cross section of 10-42, and also the fact that their appearance as appreciable interaction occurs under high-energy conditions. Nevertheless, let it be primitive and fabulously expensive, but neutrino fluxes from external and laboratory sources are recorded with ancient methods and studied in several international centers and with the discovery of the anomalous neutrino radioactivity isotope (ANRI) absorption effect, work with neutrino fluxes is available to scientists of any kind laboratory [2- 6]. At the same time, the registration of the solar neutrino flux made it possible, by statistical processing of the obtained records, to reveal their modulation by the Sun's own oscillations [2, 3]. That is, neutrino waves, more precisely their enveloping emissions of the level of radioactivity, are available for registration only as hidden periodicity of the flux of solar neutrinos. In this case, this flux is recorded by the radiometer in the form of emissions. This excludes the registration of the expected periodicities as envelopes of the neutrino flux directly reacting with laboratory devices tuned to resonance with these envelopes.

Such a conclusion should be extended to the flow of gravitons, that is, in reality, gravitational waves practically do not exist, but it is possible from the time series of emissions of gravitons interacting with the medium to isolate their envelope. But tuning the receiver to resonance with this envelope is practically meaningless. It is most promising to hope for the existence of an anomalous graviton radioisotope (AGRI) absorption. But, alas, then did not represent the existence of the ANRI effect. Graviton - after long and no less expensive research, is still unavailable (the recent loud "successful" registration suits only the authors [58]), registered the envelope of the flow of gravitons at the cross section of the 10^{-42} capture. And this is primarily because, at least, laboratory experiments do not take into account the experience with neutrino fluxes (see above). Nevertheless, we note international search period (~ 1972-1979). Then the researchers, it would seem, justified the registration of "conditionally" gravitational waves theoretically and successfully tested experimentally, methods of recording these waves by seismic and laboratory methods [59 -67]. Immediately there were two experimental search directions - laboratory with test bodies [59-60] and geophysical with the registration of the seismic response [62-67], but not without problems. Laboratory methods are still unsuccessful, probably primarily because they try to register just gravity waves, rather than graviton envelopes from, as a rule, known sources (at the beginning of search operations), and also do not sufficiently understand the problem of vibration isolation [58-63]. The search for pulse envelopes also does not fundamentally eliminate the above difficulties. In this case, test bodies and / or antennas do not contain radioactive materials.

On the other hand, in its initially successful development, seismic studies have achieved positive results [63-67]. At the same time, a search was conducted for enveloping seismic emissions (not gravitational waves) from the interaction of gravitons with rocks, which, in all likelihood, are similar to the interaction of a neutrino flux with radioactive mountain structures [2,3,5,6]. That is, we can assume that even then the registration took place under the conditions of the ANRI effect, but for gravitons, more precisely in the case of anomalous gravitational (more precisely, graviton) radioactivity isotope absorption (AGRI effect). The existence of the AGRI absorption (effect) logically agrees with the analogous conditions for the appearance of both a graviton and a neutrino (see above). Thus, the contradiction between the results of field studies (taking into account geological radioactive structures) and laboratory (not containing antennas with radioactive elements) studies is explained [58-63]. Since we are talking about the first positive experiments (now denied) on the registration of gravitons, we will consider the first pioneer field studies.

Possibilities for Recording the Gravitational-Wave Response of the Earth as Antennas

In addition to the search for gravitational radiation by Weber`s type antennas [59, 60], for the same purpose, studies of earth's seismic oscillations, or more precisely of high-frequency oscillations, noise and microseism, have been carried out occasionally [64-67]. The experimental results obtained by the geophysical method were controversial: some of them indicate the existence of a peak in the spectrum of the microseism that coincides with the period of the gravitational-wave action on the Earth [63-67], other works report negative results [68]. At the same time, both with positive results and negative ones, as a rule, the equipment and methods did not raise doubts, which made the situation paradoxical (the role of radioactive geological structures and the AGRI effect had no understanding). It is understandable that with very deep or simply very remote location of radioactive structures, the signal was not observed or was very weak. But the decisive argument of the opponents of registration by seismic methods was to estimate the required radiation power of the source (pulsar) to provide the amplitude of the recorded signal. With a cross section of 10^{-42}, the mass of the pulsar could provide radiation for several hours, (but since the section is increased by ~ 30 orders, taking into account the AGRI effect, this contradiction is eliminated). Therefore, only a small group of researchers, hoping for the effects not yet detected, continued to work [8, 66-67]. Let us consider their work in more detail, when hopes replaced both financing and imperfect equipment. In this case, for the detection of gravitational waves, the experimental fact of recording in the seismic noise spectrum of an authentic peak at the frequency of sending radio pulses from a pulsar was adopted.

Search for a Reliable Seismic Peak that Coincides with the Frequency of Sending Electromagnetic Pulses from a Pulsar

Two methods of seismic noise analysis were used, amplitude and period (frequency) [69]. In the amplitude method for studying the spectrum of seismic noise, we used a mechanical tuning fork of a tuning fork with Q of a mechanical system of oscillations Q $10^{2,3}$,and mass- $10^{2,3}$ g, tuned to the frequency of sending radio pulses from a pulsar PSR 0531 + 21 (~ 30Hz) and a radial-oriented plane fluctuations. Continuous recording of the oscillation envelope amplitude of the oscillator showed variations in the intensity of the seismic signal at a frequency of 30 Hz. For 6 hours before and after 6 hours after the culmination of the pulsar PSR 0531 + 21 in stellar time. We observed recording regions with an increase in the amplitude of the oscillations, that is, smooth signal level rises of 3-5 min duration, with some sections having parts lasting about 3 minutes of a sinusoidal shape with a period of 10-15 sec.

In the period method, a physical pendulum with a period of oscillations of ~ 1 sec, a mass of 10^4 g of weight Q ~ 10^2, and a piezo-ceramic deformation record was used as a seismic noise detector. Under the influence of seismic noise, the pendulum-detector oscillated at the forced frequencies, and was recorded using a frequency counter in the band Δf ~ 40 Hz every 10 seconds. The analysis of the records made it possible to determine the period of forced oscillations and compare it with the frequencies of sending radio pulses from pulsars. There were cases of coincidence with an accuracy of 4 to 6 characters for periods of 0.033 sec; 0,089 sec (pulsars PSR0531 + 21; RSR0833-45).

Matches with an accuracy up to the 5th sign occurred one to three times a day; up to 4,3 th -10 times a day; up to the 2nd - more than 10 times per hour. The probability of accidental coincidence with such accuracy and duration of observation according to the provisions of statistics is from $10^{-7,-8}$ to 10^{-20}, respectively. Hourly histograms of the number of period registrations were constructed in the interval ΔT = 0.032-0.034c and ΔT = 0.085-0.94c. in the stellar time. On histograms, the maxima are 6 hours apart. from the moment of the culmination of the corresponding pulsar. These histograms did not depend on local time, but not always the maxima were clear due to the influence of the general micro seismic field, tides, earthquakes and natural vibrations of the Earth, which were first recorded by a modulation method [8, 9]. At the same time, long-period oscillations of the Earth coincided with solar oscillations, that is, the interaction of the solar neutrino flux with radioactive structures of the Earth [2, 3, 5, 7]. The most contrast, as it turned out much later, is the detection efficiency of pulsars, more precisely, the dependence of the interaction of their neutrino fluxes with radioactive structures from the recording site was revealed from the lunar seismicity [8]. Thus, the remote experimental past is consonant with the present, but so far only in the part of the impact of neutrino fluxes. A brief summary of the primary successes with the registration of seismic peaks of gravitational-wave origin, (or rather, the interaction of gravitons with radioactive geological structures) obliged even then to further advance the experimental search, taking into account other features of the response of the medium. In the modern sense, despite the time gap, it can be represented as recording the amplitude of the gravitational peak according to the current stellar time.

Search for a Steady Registration of the Graviton Effect [8]

Further, to search for the gravitational-wave action on the Earth of radiation from pulsar PSR0531 + 21, the characteristics of microseisms at the frequency of sending radio pulses PSR0531 30.15 Hz were investigated. Measurements were conducted in the Moscow region in the VNIIFTRI (Mendeleevo city) cellars on Saturdays and Sundays. The measurement scheme and the block diagram of the plant are presented [8]. From the geophone, the signal was applied to the amplifier, then to three narrow-band filters with = 0.1 Hz and frequencies of 27 Hz; 30.15 Hz; 33 Hz. The envelope of the signal amplitude was recorded on the recorder H 327-3 in three channels. The sensitivity of the equipment in the recalculation for the registration of the displacement is of the order of 10^{-13}-10^{-14} cm. The control measurements at frequencies of 27 Hz and 33 Hz were necessary to identify other geophysical effects, for example, seismic arrivals from earthquakes, as well as technical jamming across all frequencies. The adjustable signals, the amplitude of the soil oscillations in the band 27-33 Hz, were within 10^{-10}-10^{-12} cm. When processing the records, the emissions were considered as useful signals exceeding 3 standard deviations and available only at the frequency = 30.15 Hz, when similar simultaneous signals at control frequencies of 27 and 33 Hz were practically not there. The root-mean-square standard deviation was determined for each record (duration ~ 12 hours) for 20-30 independent values of the microseism amplitude at the frequency under study. All 12-hour records were divided into hour intervals corresponding to the local time and in each interval the number of deviations exceeding 3σ was counted. Next, histograms were plotted for the distribution of the number of deviations of n exceeding 3σ on the hourly interval, depending on the local time. Examples of histograms are given in Figure 16, they clearly stand out the maximum occurring at the moment of time, coinciding with the time of sunrise of PSR 0531.

The measurements were carried out continuously for more than three months. This made it possible to analyze the structural changes in the histograms (the shift of the maximum n) as a function of local time, and also to investigate the supposed connection of these changes with the stellar time (Figure 17). The theoretical course of local time with respect to the stellar is shown in Figure 17 by a straight line. As follows from this figure, in accordance with this line the maxima of the histograms of Fig. 16 move. The results of the measurements performed are in good agreement with the previous studies [63-65], but the detected signals exceed the assumed amplitudes of microseisms of gravitational-wave origin within the framework of the generally accepted interaction models [59]. According to the Dyson model [62], the earth's seismic response under the action of a gravitational radiation flux of 1 erg / cm^2s at a frequency of = 30.15 Hz from pulsar PSR 0531 Δx is ~ 10^{-15} cm (Δx - displacement in a seismic wave). The appearance of resonances in the earth's crust with a Q of rocks Q (Q ~ 10^2) will increase by a factor of Q. Taking into account in the Dyson model the features of the Earth's structure: stratification, in homogeneities in the size of 10^2-10^3 m and foci of local significant stress concentrations in the rocks of the region of registration, will also lead to an increase. Indeed, in this case, each interface between layers or in homogeneities is an additional source of seismic waves excited by radiation. The periodic stresses arising at the frequency f, forming with the already existing stresses in the concentration sites, will cause the "growth" of the cracks and the formation of new micro cracks, which will be accompanied by the emission of broadband micro seismic pulses. Applying the calculations of Dyson for estimates in the framework of the new model, for PSR 0531 we have ~ 10^{-9}-10^{-10} cm at 1 erg / cm^{2}s, and the minimum detectable flux of gravitational waves is $/t/ \approx 10^{-4}$-10^{-7}erg/cm^{2}s at $\sigma_\omega^2 \sim 10^{-20}$; $\Delta f = 10^{-3}$, $Q \sim 10^3$, $N \sim 10^3$, $S = 10^6 cm/s$ (σ_ω - middle square amplitude of seismic noise, Δf- frequency band of the received signal, N - number of layers or in homogeneities, S - speed of sound in terrestrial rocks). From the consideration of the Dyson model it follows that the contribution of the components of the microseisms of gravitational-wave origin to individual regions of the spectrum need not be in the form of a separate peak at the frequency f. The resonance and the characteristic size of the in homogeneities can cause deformation of the peak boundaries or its displacement. The nonlinear properties of the earth's crust and micro seismic impulses in stress centers will enhance this effect. Therefore, the criterion of the cosmic origin of individual regions of the spectrum is not only the presence of a peak at frequencies f, 2 f, but also their temporal features. Thus, taking into account the layered and inhomogeneous structure of the Earth, the possibility of establishing resonances, seismic emission in stress concentration centers, and also at = 10-5 erg / cm2, the sharpness of the contradiction would seem to weaken. Introduction of the concept of a seismically active medium greatly simplifies of problems, however, the nonlinear properties of the seismic environment and process introduce new fundamental difficulties in interpretation when registering only on one planet. Moreover, taking into account [7], the correctness of the foregoing constructions is far from obvious, and the huge significance of the registered effect does not allow recognize the result unconditionally taking into account even the proven stellar time factor. The situation is saved only by the introduction of the AGRI effect, but, in the general case, only with a strong correlation with the course of stellar time and the maxima at sunsets and sunrises in stellar time. And what about the HENRI effect and star time recording: unfortunately, the researchers then did not represent the role of the solar neutrino flux and, paying attention to a reliable peak at zero time of the day, took it as a feature of gravitational waves. However, its zenith location corresponds to the maximum radiation pattern of the flow of pulsar neutrinos and their interaction with the medium, including radioactive geological structures, in accordance with the ANRI effect. The existence of these maxima from the ratio of their amplitudes allows us to roughly consider the ratio of the ANRI / AGRI effects, which can be estimated ~ 2-2.5. Since at that time studies of gravitational-wave peaks were administratively forbidden to us, in the future the search for seismic noise was carried out fragmentarily, but sometimes with an impressive. result.

Figure 16: There are an Example of Histograms of Hourly Distributions for Emissions on a Frequency of 30.15 Hz

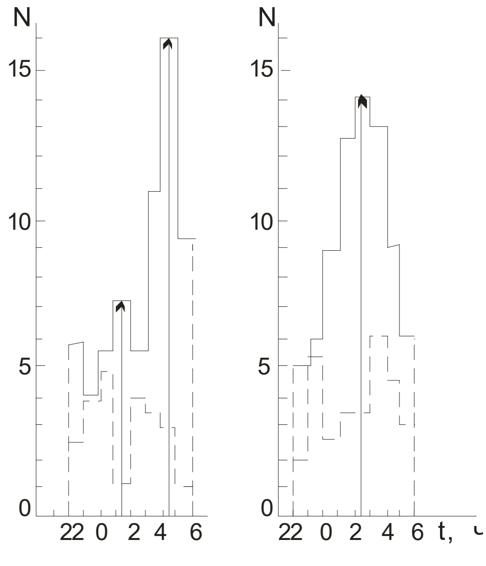
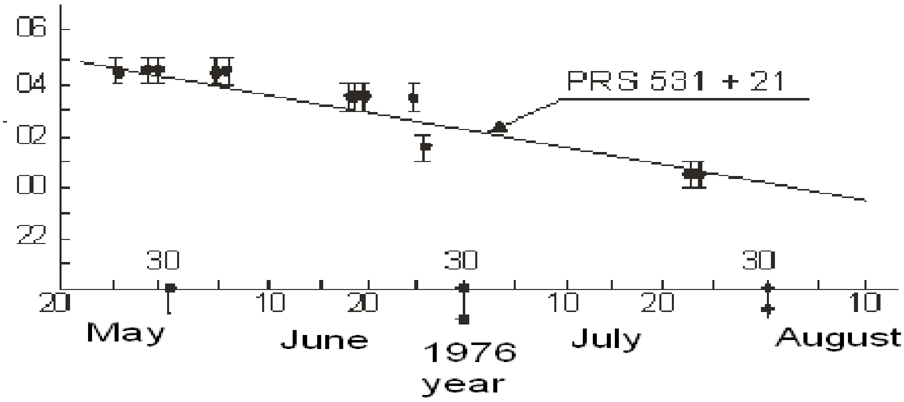


Figure 17: Theoretical and Experimental Behavior Moving of the Histogram of Maxima in Figure 16 Local Time Relative to the Stellar Time



So, Egyptian expeditions proved to be very productive [70, 71]. The complete absence of man-made noise, atmospheric disturbances, especially in the Dakhshur pyramids and even on the Giza plateau, the existence near the pyramids of the similarity of the old oil reservoir (oil enriched with radioisotopes) contributing to the manifestation of the ANRI, AGRI effects, led to an abundant "harvest" of astrophysical peaks, primarily in Dakhshur [70, 71], Tables 5, Table 6, Table 7, Table 8.

Table 5: Peaks of the Low-Frequency Part of the Spectrum of the Pyramid Lobe, Dakhshur

N	1	2	3	4	5	6	7	8	9
f, Hz	1.1716	1.6602	2.1484	2.5391	3.0273	3.7109	4.6875	5.1758	6.1523
T, s	0.8533	0.6024	0.4655	0.3938	0.3303	0.2695	0.2133	0.1932	0.1625
A r.u.	0.55	1.025	1.30	1.68	0.85	1.20	0.41	0.45	0.39

Table 6: The Parameters of Pulsars with periods P_{0i} which Differ from the Values of the Spectral Peaks of Table 1 in the 2nd and 3rd Signs, Dahshur

Spectr.pic. s.	Pulsar, PSR	PeriodP_0 s.	Density stream $We_{.m.}$ на 400 MHz	Distance, КPs
1	2	3	4	5
	0820+02	0.8648	22	0.9
	0953–52	0.8621	29	3.9
0.8533	1309–55	0.8492	16	5.3
f_1=1.1718 Hz	1358–63	0.8427	34	3.4
	1503–51	0.8407	5	2.3
	1558–50	0.8642	47	5.7
	1648–42	0.8440	98	18
	1941–17	0.8411	6	2.2
	1729–41	0.6279	9	7.6
	1813–26	0.5929	30	5.1
0.6024	1818–04	0.5980	170	1.5
f_2=1.6602 Hz	1844–04	0.5977	75	4.5
	1857–26	0.6122	120	1.5
	1911+11	0.6009	5	2.4
	1919+14	0.6181	17	2.8
	0403+61	0.5946	30	0.9
	0254–53	0.4477	17	0.6

Spectr.pic. s.	Pulsar, PSR	PeriodP_0 s.	Density stream $We_{.m.}$ на 400 MHz	Distance, KPs
	0626+24	0.4767	30	2.7
0.4655	1030–58	0.4642	14	13
f_3=2.1484 Hz	1159–58	0.4528	23	5.6
	1323–58	0.4779	120	11
	1353–62	0.4557	–	14
	1436–63	0.4596	21	4.6
	1510–48	0.4548	9	2
	1641–45	0.4550	375	4.9
	1718–02	0.4777	24	2.8
	1718–32	0.4771	60	4.6
	1756–22	0.4609	20	5.5
	2305+55	0.4750	23	1.7
	0559–05	0.3959	17	0.4
	1240–64	0.3884	110	14
0.3938	1609–47	0.3823	17	6.0
f_4=2.5391 Hz	1642–03	0.3876	440	0.2
	1745–13	0.3941	25	4.0
	1813–36	0.3870	22	3.7
	1839+09	0.3813	22	1.9
	1910+10	0.4093	2	4.0
	1913+10	0.4045	30	7.5
	1937–26	0.4028	8	2.0
	2024+21	0.3981	3	3.6
	2148+63	0.3801	25	4.9
1	2	3	4	5
	0449+55	0.3408	40	0.6
	0611+22	0.3349	21	3.5
0.33032	1110–65	0.3342	19	8.0
f5=3.027 Hz	1600–49	0.3274	44	5.1
	2048–72	0.3413	29	0.6
	2123–67	0.3257	7	1.3
	2310+42	0.3494	55	0.6
	0136+57	0.2725	45	2.3
	0905–51	0.2535	35	1.2
0.2695	0.950+08	0.2530	500	0.1
f6=3.710 Hz	1143–60	0.2733	17	3.1
	1317–53	0.2797	18	3.8
	1451–68	0.2633	350	0.3
	1556–57	0.2570	110	2.3
	1806–53	0.2610	12	1.7
	1914+09	0.2702	15	1.9
	1930+20	0.2682	7	6.2
0.2133	0743–53	0.2148	23	2.5

Spectr.pic. s.	Pulsar, PSR	PeriodP_0 s.	Density stream $We_{.m.}$ на 400 MHz	Distance, KPs
f7=4.687 Hz	1221–63	0.2164	47	3.2
	1929+10	0.2265	130	0.05
	0.656+64	0.1955	40	0.2
	1055–52	0.1971	80	1.1
0.19321	1556–57	0.1944	20	6.8
f8=5.175 Hz	1557–50	0.1925	–	9.0
	1821–19	0.1893	52	8.6
	1915–13	0.1946	50	2.9
	0355+54	0.1563	56	1.5
0.16254	0740–28	0.1667	195	2.0
f9=6.152Hz	1449–64	0.1794	231	2.6
	1541–52	0.1785	23	1.3
	1804–08	0.1637	53	4.4

Table7: Comparison of Some Parameters of the Spectral Noise Peaks of the Pyramid and Pulsars in the Period Band 0.8-0.1 s

N	1	2	3	4	5	6	7	8	9
T, sec	0.8533	0.6024	0.4655	0.3938	0.3303	0.2695	0.2133	0.1932	0.1625
Arealt.un	0.55	1.025	1.30	1.68	0.85	1.20	0.41	0.45	0.39
$\overline{P}_0$, s					0.3362				
п	8	8	13	12	7	10	3	6	5
$\Sigma We_{.m.}$,	240	460	720	700	215	1090	200	240	550
$\Sigma\dot{P}_0$					61.60				
$T-\Sigma\dot{P}_0$					–.0059				

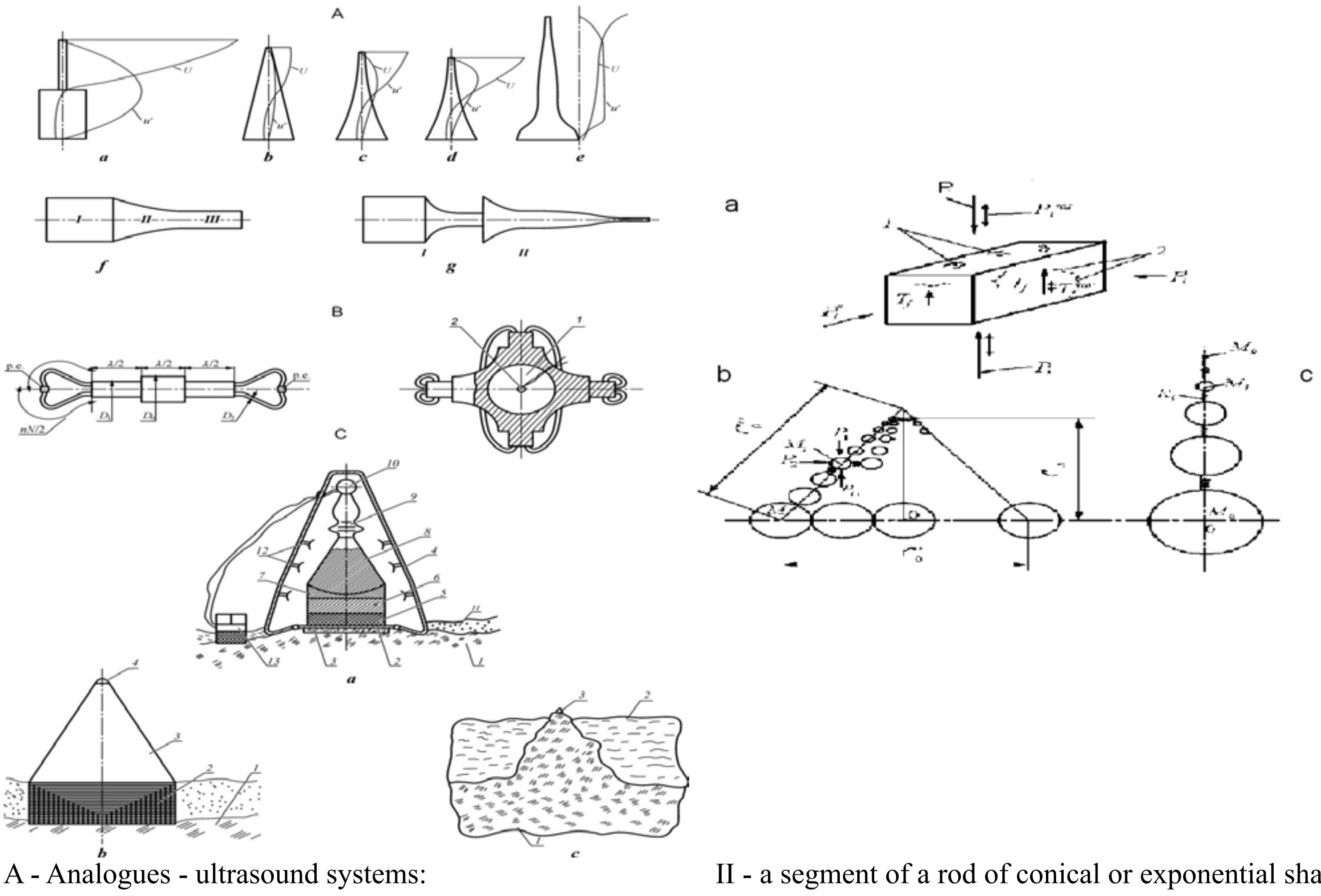
Table 8: Comparison of Some Parameters Spectral Peaks of the Pyramid Noise and Pulsars

Centre period spectral line, s	Pulsar, PSR	Period P_0, s	Density stream $We_{.м.}$ on 400 MHz	Distance, kps
	0403–76	0.5452	19	0.8
	0450–18	0.5489	55	1.6
0.5555	0808–47	0.5471	46	5.7
f_2' =1.8 Hz	0.919–41	0.5454	63	0.6
	0.904–74	0.5495	11	2.0
	1322–66	0.5430	28	8.2
	1749–28	0.5625	1300	1.0
	1834–10	0.5627	30	10
	1921+17	0.5472	2	4.3
	2016+28	0.5579	290	1.0
	0540+23	0.2459	30	2.9
	0905–51	0.2535	35	1.2
0.2500	0.950+08	0.2530	500	0.1
f_6' =4.0 Hz	1451–68	0.2633	350	0.3

Centre period spectral line, s	Pulsar, PSR	Period P_0, s	Density stream $We_{.м.}$ on 400 MHz	Distance, kps
	1556–44	0.2570	110	2.3
	1806–53	0.2610	12	1.7
	1930+20	0.2682	7	6.2
	0540+23	0.2459	30	2.9
	1719–37	0.2361	25	3.0
0.2381	1754–24	0.2340	–	5.1
$f'_{6,7}$ =4.2Hz	1922+20	0.2377	4	8.0
	2324+60	0.2336	41	3.4

As follows from Tables 5-8, successful registration of seismic peaks at pulse sending frequencies from pulsars is caused not only by the existence of HENRY, AGRI effects, but also by focusing the properties of the pyramid [71], when the discrete-periodic structure of the pyramid plays the role of amplitude and filter amplifier seismic interference. Schemes of the pyramid and its laboratory analogues are presented in Figure 18.

Figure 18: Laboratory Diagrams of the Nearest Wave Analogs of the Pyramids of Egypt and the Discrete-Periodic Structural Model of the Pyramid



A - Analogues - ultrasound systems:
Circuits of round simple single-stage concentrators of longitudinal oscillations: a - step; b - conical; c - exponential; d - catenoidal; e - Gaussian (ampoule). The curves show the distribution of the amplitude of the vibration velocity v and deformation u′ along the length of the concentrator; f - compound concentrator: I - cylinder of large diameter; II - a segment of a rod of conical or exponential shape; III - cylinder of small diameter; g - two-stage concentrator: I - step concentrator; II - ampoule concentrator.
B - Analogues - gravitational antennas of laboratory scale: 1-the diagram of a gravitational antenna with a two-stage signal amplification; the last cascade is resonant waveguides of length n×λ / 2; 2 - spherical gravitational

antenna with oscillation transformers and a complex radiation pattern: 1 – piezo ceramic receiver, 2 - cavity with liquid.

C-analogues - gravitational antennas of geophysical (seismic) type:a - Geophysical gravitational antenna-transformer of multistage type:

1 - bedrock; 2 - base plate; 3 - the bottom of the noise and heat-shielding housing 4; 5 - active piezo -seismic protection; 6 - heat insulator; 7 - acoustic (seismic) lens; 8 - waveguide - transformer; 9 - complex cascade of the transformer; 10 - receiving unit; 11 - the ground; 12 – thermo stating elements; 13 - control and primary process in g unit;

b - The simplest geophysical antenna-transformer based on the block scheme: 1 - rock base; 2 - seismic lens; 3 - block waveguide - concentrator; 4 - receiving system; 5 – ground

c - island-antenna: 1 - island and adjacent structures; 2 - the ocean; 3 - receiving system.

D is a discrete-periodic structural model of the Egyptian pyramid:

a - schematized primary element-block structure of the pyramid: 1 - contact spots with blocks, 2 – micro cracks. P_i - forces from the vertical load (weight) of the pyramid; P_i', P_i'' - lateral forces of different faces; $P_i' << P_i$; T_f - lateral friction forces; P_i^{var} is a variable component of vertical force; T_f^{var} is a variable component of the frictional force;

b - multi-element idealized linear model of the pyramid: M_i - mass of a single element; r3i is the elastic connection of the i-th chain (line) of the general pyramid array; λ_0', λ_0'', λ_0''' - height, base (diameter) and generator of the model; P_1, P_2, P_3 - external forces acting on the pyramid;

C-one-dimensional model of the pyramid chain: M_0, M_1, M_i, M_k are the reduced masses of the base, the first rows, the intermediate level and the vertex, respectively; R_1, R_i are the elastic bonds between the masses M.

It should be noted that the success of recording seismic peaks at the frequencies of sending radio pulses from pulsars not only in Dakhshur, but also on the Giza plateau is due to the proximity of the geological radioactive structure (HENR and AGRI effects), favorable seismic situation (no interference), the focusing property of the pyramids. On the basis of this experience, it is possible to give recommendations for the successful registration of the flow of gravitons (not gravitational waves!) on laboratory antennas (Figure 18). For all circuits in Figure 18. the end of the massive part of the antenna must be supplemented with a disk containing radioactive isotopes to provide AGRI effect, "interference" - ANRI - the effect of filtering the antenna pattern. It is difficult to guarantee that placing radios - isotopes inside discs - mirrors will save the situation - too untalented scheme [58].

The effectiveness of the geophysical method was further demonstrated by studying the lunar seismicity [8]. By statistical analysis of lunar seismograms, seismic spectral peaks were obtained at frequencies recorded earlier by different researchers [63, 64]. The effects of the ANRI and AGRI, which are completely determined by the radioactive structures, were clearly manifested. Unfortunately, the lack of data on local and stellar times not possible to separate the peaks belonging (neutrinos or graviton), but this has not prevented forms another information unit pulsar periods (see Table 9).

From the consideration of Table 9, it follows that the frequencies of the lunar seismic peaks coincide with the pulsar frequencies to the 3rd-4th sign, which is extremely unlikely. Since the variants of the distribution of radioactive elements in the geological structures of the Moon are known [73], analyzing the seismic noise of the Moon on X, Y, Z components at pulsar frequencies, we can clarify the relationship between the spatial arrangement of radioactive elements and the structure of seismic noise at pulsar frequencies even within the ANRI effect. All of the above experimental materials represent a significant array accumulated in different places, with different equipment, with different recording times. It would seem that this is enough to recognize the existence of AGRI effect and the transition to new methods of its registration. But for this a new laboratory experiment is needed, on a fundamentally new device that allows us to clearly demonstrate the existence of the AGRI effect and the registration of gravitons. Such a device was developed (Figure 19) quite recently.

1, 1 '- strands of suspensions of a pair of short-period pendulums; 2, 2 '- strands of suspensions of a pair of long-period pendulums; 3, 3 '- dumbbells (rocker arms) of short-period pendulums; 4, 4 'masses of rocker arms 3, 3'; 5, 5 '- dumbbells (rocker arms) of long-period pendulums; 6, 6 '- removable trial masses of long-period pendulums; 7, 7 '- points of fastening of threads of long-period pendulums; 8, 8 '- suspension points of short-period pendulums; 9 - the top cover of the pendulum system; 10 - the base of the system; 11 - the transparent case; 12 - the block of registration of turn of rocker arms 3, 3 'and 5, 5'; 13 - optical system for recording the rotation of rocker arms; 14, 14 '- calibration masses; 15, 15 '- rods for moving masses 14, 14'; 16,16 '- vertical stands for moving

Table 9: Comparison Frequencies of Spectral Peaks the Seismic Lunar Noise with the Frequencies of the Known Pulsars [72]

№	Rec. spectrum Peak (Hz)	Peak [27] (Hz)	PSRJ	№ PSRJ
1	0.3492	0.34912	1803-1857	1107
2	0.3557	0.34990	1831-1223	1259
3	0.3589	0.35829	0746-4529	159
4	0.36297	0.36177	1322-5329	431
5	0.3737	0.375505	1901+0413	1474
6	0.3808			
7	0.3848	0.385055	0343-3000	71
8	0.3880			
9	0.3945			
10	0.3985	0.397149	1012-2337	241
11	0.4042	0.402608	1324-6302	433
12	0.4082	0.407396	1701-3766	810
13	0.4155	0.415347	1032-5206	262
14	0.4204			
15	0.4252	0.425216	0157+6212	55
16	0.4365	0.438461	1119-7936	310
17	0.4414			
18	0.4470			
19	0.4535			
20	0.4559	0.454065	1049-5833	278
21	0.4600	0.461748	1831-1329	1260
22	0.4665	0.468693	1012-5830	244
23	0.4729	0.472774	0055+5117	33
24	0.4777	0.477751	1826-1131	1234
25	0.4850	0.485834	1915+0752	1582
26	0.4899			
27	0.4931			
28	0.5012	0.500776	1944+1755	1652
29	0.5109	0.511023	1901-1740	1483
30	0.5230	0.523169	1839-1238	1320
31	0.5319	0.533043	1837-1243	1304
32	0.5464	0.546192	1901+1306	1479
33	0.5546	0.54417	1018-1642	551
34	0.5974	0.597873	1418-5945	495
35	0.6386	0.638732	1720-1633	882
36	0.6750	0.676259	1328-4921	442
37	0.6807	0.681746	0231+7026	62
38	0.6928	0.693313	0754+3231	162
39	0.7122			
40	0.7230	0.723353	1239+2453	382

Figure 19: Schematic Diagram of a Modified Scheme for Recording the Field and Corpuscular Effects on Test Masses based on the Torsion Pendulum of Cavendish

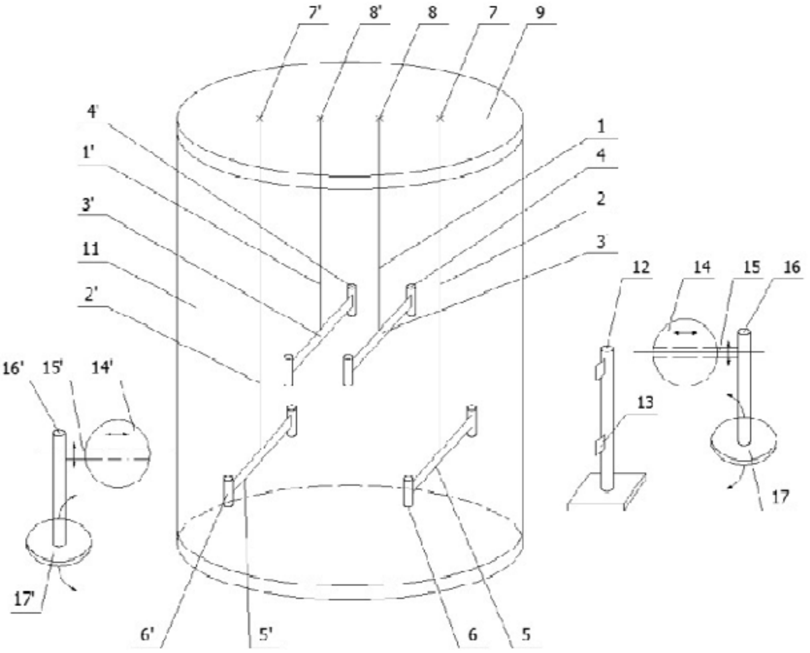


Figure 19A: Top View, 1, 1 '-Shaped Rocker Masses; 2,2 `Translucent Sections of Mirrors of Rocker Arms 3, 3 ', 5, 5' (see Figure 4); 3 - Mirror-Rocker; 4 - Fixing Point of the Thread 5

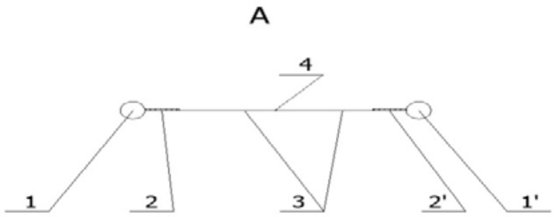


Figure 19B: Side View; 1, 1'- Exchangeable Rocker Masses; 2, 2'- Semitransparent Sections of Mirrors of Rocker Arms 3, 3 ', 5, 5': 3 - Mirror-Rocker; 4 - Fixing Point of the Thread 5

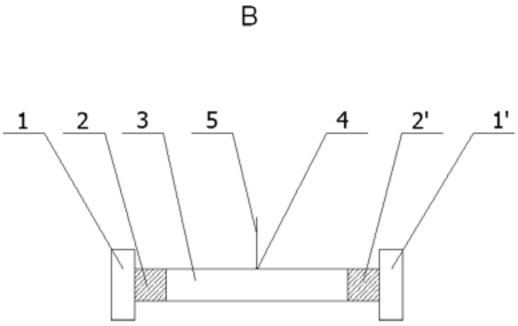


Figure 19 C: The Synchronous Rotation of the Rocker Arms occurs under the action of a Neutrino Signal, since the Masses 1, 2 'consist of Radioisotopes. Mirror-Mirrors are Parallel; the Optical Registration Beam 6 does not Fix the Violation of Parallelism of the Mirrors, only their Total Rotation Angle is Recorded, on the Registration Surface 6 with Respect to the Vertical 7

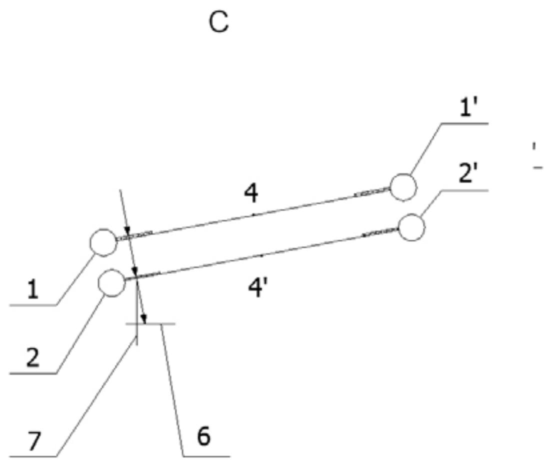


Figure 19D: Violation of the Parallelism of Beam-Mirror Mirrors under the Action of a Graviton Flow on a Mass of 1.1. The Beam 6 Propagates between the Mirrors, Reinforcing the Registration Angle of the Relative Rotation of the Mirrors 4, 4 'with Respect to each other and the Vertical 7

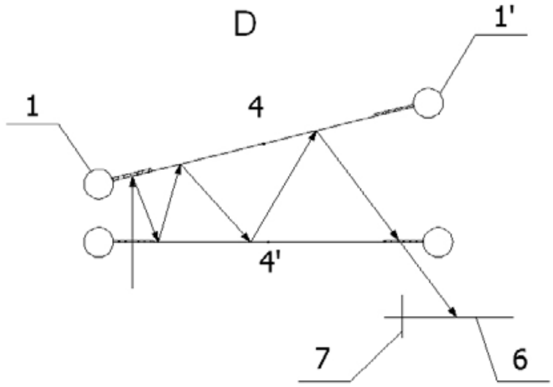
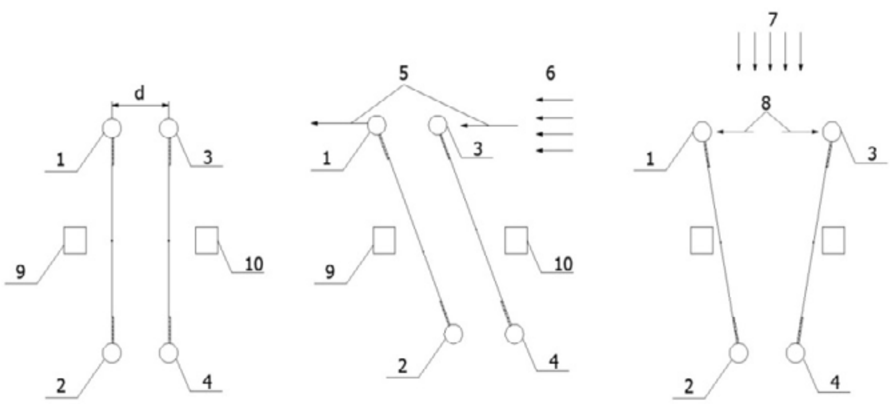


Figure 20: Scheme of Displacements and Rotation of Rocker Arms with Loads 1-4 and Registration Systems 9,10: 1-Cargoes from Passive Matter; 2-Mass 1,3 from Radioisotopes under the Influence of a Neutrino Flux of 6, 3- Mass under the Action of a Graviton Flow 7



the calibration masses; 17, 17 '- bases of test masses for their rotational movement around pendulums. Arrows indicate the direction of movement of the corresponding blocks. Figure19A, Figure 19B, Figure 19C, Figure 19d.

Figure 20. Scheme of displacements and rotation of rocker arms with loads 1-4 and registration systems 9,10: 1-cargoes from passive matter; 2-mass 1,3 from radioisotopes under the influence of a neutrino flux of 6, 3- mass under the action of a graviton flow 7. The displacement scheme demonstrates the existence of the ANRI and AGRI effects.

Conclusion

1. Various schemes for the experimental recording and recording of the effects of graviton and neutrino fluxes on geophysical structures containing radioactive isotopes are presented and implemented.

2. Some of the schemes were successfully implemented more than 40 years ago, when the existence of the ANRI and AGRI effects was unknown, which caused the non-recognition of the results of the experiments.

3. The discovery of the ANRI and then of the AGRI effects will make it possible to register the astrophysical fluxes of gravitons and neutrinos, and the registration of gravitational waves - only as envelopes of the flow of gravitons in the near future is impossible.

4. There is a simple and accessible scheme for registering fluxes of gravitons and neutrinos based on the torsion pendulum of Cavendish.

The Main Conclusion

The astrophysical processes and objects (the Sun, the Earth, the Moon and their wave fields, solar neutrino fluxes and their interactions) that are well-known for study reveal a strong interconnection, and this is without taking into account the fluxes of particles and fields during supernova outbursts. Such a relationship already for other more distant objects could be studied 5-20 years ago if space programs were compiled with an understanding of the problems of astrophysics.

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