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INTERPRETATION OF ASTRONOMICAL DATA CONNECTED WITH N. A. KOZYREV'S DISCOVERY

Abstract. A. Kozyrev discovered a new type of action exerted by cosmic objects. In the paper an interpretation is given of data of a series of observations of the Sun carried out by a group of researchers from Novosibirsk Mathematical Institute aiming to register and study the action of the same type.

რეზიუმე. ა. კოზირევის მიერ აღმოჩენილ იქნა კოსმოსური ობიექტების მიერ გამოვლენილი ახალი ტიპის ქმედება. ნაშრომში მოყვანილია ნოვოსიბირსკის მათემატიკის ინსტიტუტის მკვლევართა ჯგუფის მიერ ზემოხსენებულ ქმედებასთან დაკავშირებით მზეზე დაკვირვებათა მონაცემების ინტერპრეტაცია.

An eminent astronomer and astrophysicist Nikolaĭ Aleksandrovich Kozyrev (1908–1983) is the author of several discoveries (see [1]).

Kozyrev's works in a new field of science which he called causal mechanics were severely criticized by several leading Soviet physicists – L. A. Artsimovich, P. L. Kapitsa, and I. E. Tamm. To my opinion, this criticism was not well-grounded. Apparently, it was mainly caused by the paper by a famous writer Marietta Shaginyan devoted to Kozyrev's conception [2].

Kozyrev's discovery which gained world-wide recognition is the discovery of volcanism on the Moon. The first publications on these phenomena aroused a distinctly negative reaction of authoritative specialists, their arguments resembling the statement of a notorious character of one of the short stories by A. P. Chekhov: "This cannot be true because this can never be true". Yet later the main critic of Kozyrev's observations presented him his apologies, and the International Academy of Astronautics awarded N. A. Kozyrev a Gold Medal for the discovery of volcanism on the Moon. Such a medal was awarded at that time only to two Soviet citizens, to the first cosmonaut Yuriĭ Gagarin and to Kozyrev.

One of Kozyrev's discoveries is a new type of action exerted by cosmic objects which propagates at the speed much greater than the speed of light.

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Those stars which are closed, by the astronomical scale, to the Solar system, up to a thousand light years, are moving with respect to the Sun at velocities from 20 to 100 km/sec. Therefore, the apparent position of a star differs from the true position by $10''$–$50''$. The accuracy with which positions of stars are measured by modern telescopes is about $0.01''$.

Kozyrev constructed a special indicator, focused it to the true position of a star and registered a reaction of the indicator (stars 10UMa, αLeo, γBoo, εBoo, αLyr, iPer, τPer, ζ^2Aqr, βPeg, etc.; Galaxies M31 (Andromeda Nebula), M2 and M3). This action was registered now always. To my opinion, the propagational speed of this action exceeds at least ten times the speed of light. Kozyrev discovered the same action exerted by planets - Venus, Mars and Saturn. Physicists simply paid no attention to this Kozyrev's discovery, though on the basis of this action N. A. Kozyrev proposed a new direct method to determine trigonometric parallaxes of stars and showed its reliability for dozens of stars whose trigonometric parallaxes were already known [3].

In autumn 1989, a group of researchers from the Institute of Mathematics working at the Crimean Astrophysical Observatory (Nauchnyĭ village) repeated Kozyrev's observations [4]. Shortly after analogous results were obtained with the aid of a somewhat different receiving system by a researcher from the Main Astronomical Observatory of the Ukrainian Academy of Sciences (Kiev) [5]. It should be noted that sufficiently large telescopes, with minor diameter more than one meter, are necessary to register signals from stars. The action concerned possesses the following properties. It passes unhindered through obstacles which are opaque to the light: measurements were made on a telescope with its duraluminium shutter closed. This action is not subject to reflection but can be shielded and reflected. The latter circumstances allowed one to register these rays by focusing the action of a star.

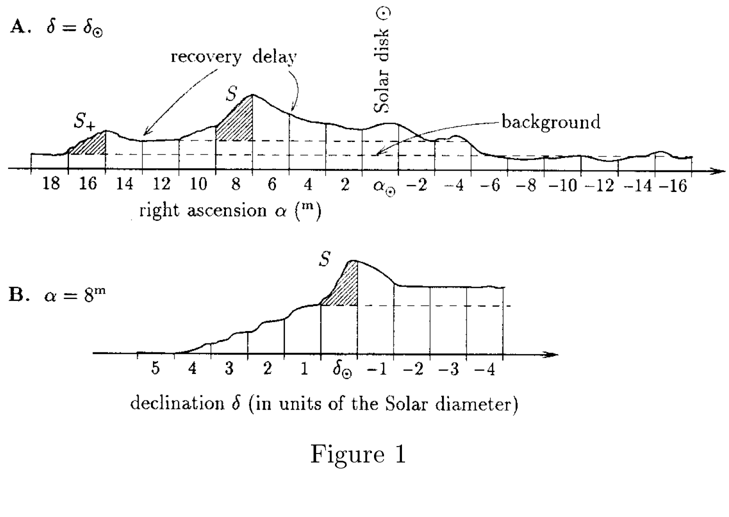

Figure 1

To register actions of stars, Kozyrev used several types of indicators, in particular, high precision torsion scales and metal-film resistors in the Wheatstone bridges. In the first case, the angle of rotation under the influence of the action was registered, and in the second case the change of the resistance of a resistor was registered.

In 1990, a group of researchers from the Institute of Mathematics carried out a series of observations of the nearest star, the Sun. Their aim was to register and study the action of the same type that has been registered by Kozyrev from stars. Since the action of the Sun is incomparably greater than that from any other star, it was sufficient to use a relatively small telescope with the minor diameter 10 cm to focus the action (the telescope "Mitsar" TAL-1 intended for visual observation of celestial objects was used).

Now let us turn to the data obtained in experiments with the Sun (see Figures 1, 2 and 3).

Figure 1 shows the results of scanning of the daily parallel to the Sun with the aid of a physical indicator, a metal-film resistor. Experiments were made by M. K. Lucet (Sobolev Institute of Mathematics, SD RAS), see [6].

The curve A is the reading of the recorder during discrete scanning: a certain region of the daily parallel of the Sun, the center of this region positioned at the specific right ascension α (the declination δ is fixed, $\delta = \delta_{\odot}$)was projected for the period of one minute onto the metal-film resistor serving as a sensitive element of the corresponding receiving system [3, 4].

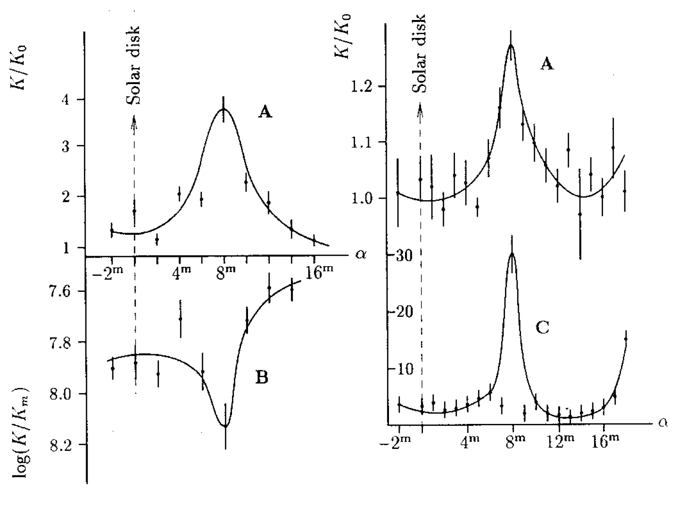

Figure 2

The diameter of the Sun image was about the length of the resistor. The values of α are indicated with respect to the center of the Solar disc

($\alpha_\odot = 0$). The time of scanning increases from the left to the right; $\alpha > 0$ ahead of the Solar disc; $\alpha < 0$ behind it. During the whole of observation the aperture of the telescope was closed by a plastic diaphragm. The atmospheric conditions necessary for carrying out these observations are identical to those which are usually required for studying the Solar corona. As one can see, the anomaly S at $\alpha = (8 \pm 1)^m$ is recorded. In addition, there exists another anomaly S_+ at $\alpha = (16 \pm 1)^m$. Such anomalies were observed by N. A. Kozyrev for many stars and several star systems. The presence of the anomaly S was corroborated by discrete scanning in declination at $\alpha = 8^m$ (the curve B).

Figure 2 shows the results of scanning of the daily parallel of the Sun with the aid of a biological indicator, a colony of *E.coli* microorganisms. The experiments were made by V. A. Gusev (NPO "Vector").

The cells in the anabiotic condition in a hermetic cuvette were placed for 3 minutes into the focal plane of the telescope when a certain region of the daily parallel of the Sun was projected onto them. The center of this region was at the indicated value of the right ascension α; the declination was fixed, $\delta = \delta_\odot$. The diameter of the Sun image was about the linear dimensions of the cuvette. The aperture of the telescope was closed by a plastic diaphragm in the course of the whole experiment. After exposure the cells were placed in corresponding conditions depending on the method of studying their further vitality. As a test, their ability to form colonies on a hard agarized medium was used. With the aid of this test the viability of the cells was studied (by a number of cells capable of reproducing), and also their state was studied by determining the spontaneous mutation background and by the capability of cells to reproduce in nonoptimal conditions.

On the curve A, K is the number of cells forming colonies in the sample, K_0 is the same number in the control. The values of the right ascension of the region being scanned are indicated with respect to the center of the Solar disc, $\alpha_\odot = 0$; $\alpha > 0$ corresponds to the region ahead of the Solar disc; $\alpha < 0$ - behind it. As one can see, the experimental data show that there exists a pronounced anomaly corresponding to $\alpha = 8^m$. The exposure of cells at the focal plane of the telescope when the apparent Sun ($\alpha = 0$) was projected onto them does not stand out against the background, while in the case of exposure at $\alpha = 8^m$ the number of cells which formed colonies sharply increased.

The curves B and C corroborate this effect of superactivation of cells after exposure at $\alpha = 8^m$. On the curves M, K_m is the number of cells in the sample which are immune to the action of an antibiotic (Rifampicinum); K is the number of viable cells in the sample. Experimental data show that after the exposure at $\alpha = 8^m$ the spontaneous mutation background sharply decreases. The curve C shows the data obtained when after the exposure in the telescope the cells were incubated for 10 hours at nonoptimal temperature (15°C below the optimum) and in the conditions of substrate hunger (in distilled water). These experimental data also testify to a substantial superactivation of cells, namely, after their exposure at 8^m ahead of the apparent Sun.

As one can see, the reaction of cells to the scanning of the daily parallel of the Sun is in agreement with the reaction of the metal-film resistor in the previous experiment, the anomaly S on Figure 1. In the case of a biological indicator the reaction to the apparent Sun does not stand out against the background at all. As concerns the anomaly S_+ for the resistor, judging by the data presented on the graph C, it is worth while studying this anomaly by a proper method.

Figure 3 shows the dynamics of the mass of a mineral in the experiment with the Sun at the Crimean Astrophysical Observatory in October 1991). The atmospherical part of this work on the BST-1 telescope was made by V. I. Khanejchuk (KrAO, Ukrainian Acad. Sci.).

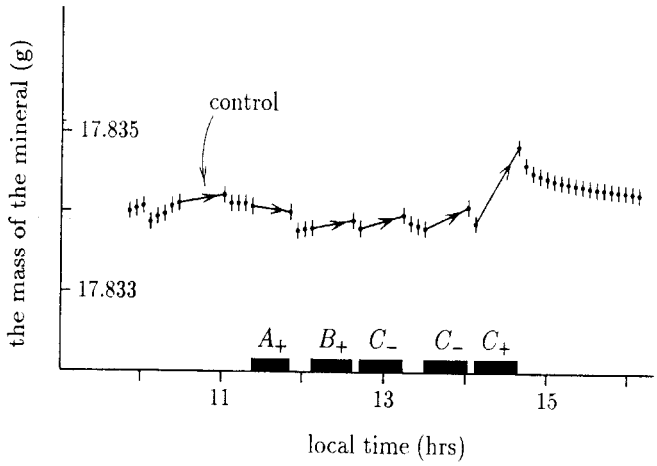

Figure 3

As a detector in this experiment a geological specimen (garnet) was used with the mass 17.8 g. The exposure at the input slot at the focal plane of the spectrogeliograph was 30 minutes. The dashed segments A_+, B_+ and C_+, C_- mean that during the exposure the region of the daily parallel of the Sun centered at the point where the center of the Solar disc will be observed after 12, 4 and 8.3 minutes, respectively, was projected onto the mineral. The subscripts "+" and "−" denote two different orientations of the mineral. The arrows show the reaction of the mass (weight) of the mineral to the exposure.

The experimental data presented corroborate the above-discussed anomaly lying at 8^m ahead of the Solar disc in the right ascension (C_+) and also exhibit the phenomenon of anisotropy which is usual for minerals (compare C_+ and C_-).

Summing up the results of this complex experiment obtained with the aid of detectors of various nature, at various positions of the Earth on its orbit, at various observatories and at various telescopes, we can state that at certain conditions we observe two anomalies in the reaction of sensors to the scanning of the daily parallel of the Sun from 18^m ahead of the Solar disc to 16^m behind it: at $(8 \pm 1)^m$ and at $(16 \pm 1)^m$ ahead of the apparent Sun. The anomaly corresponding to the apparent Sun is weak, irregular, and is not observed in the case of a biological indicator.

Observations of the action from the Sun differ in principle from observations of the actions from stars which were registered by Kozyrev: the event "true star" and its true position coincide, while the event "true Sun" and its true position do not coincide (because of the rotation of the Earth).

It would be natural to assume that this action of the Sun which is not taken into account by the adopted physical theories, exerts a substantial influence on various phenomena on the Earth.

Evidently, the available experimental data are insufficient to create a complete theory of the actions which were discussed in this report. There are two approaches which, possibly, will allow one to construct a theory describing this kind of interactions.

The first one is the causal mechanics, the foundations of which were laid in Kozyrev's works, his conception of communication in the space-time via the temporal channel.

The second is the theory of tachions; one of the creators of this theory was an eminent physicist Ya.P. Terletskiĭ.

The conception of the physical reality of the space-time is used in the works by I. A. Eganova where the celestial sphere of the observer on the Earth is considered as his World of events.

According to the above-stated, the point on the daily parallel of the Sun centered at 8^m ahead of the Solar disc (which corresponds to the event connected with the Sun and having the temporal coordinate coinciding with the moment of observation) is identified with the event "true Sun". The observation of three images of the Sun on Figure 1 (S_+, S and the Solar disc) is interpreted as a connection of two space-time points not through the "spatial channel" but through the "temporal channel" (through a null proper time interval) with its three possibilities [7]. Thus, we can observe and measure not only the "locations" of things. Distinct results of the experiment with the Sun in its biological part allow one to say that "we deal with events", as J. L. Synge said in his lecture [8]. Let us continue the citation: "... So has physics from its beginning. ... the totality of events forms a 4-dimensional continuum – we call it *space-time.* It is a single concept, not a combination of the separate concepts of *space* and *time*".

The essence of the World of events, which is emphasized in many works devoted to the space-time, consists in deep interconnection of the spatial and temporal aspects of the material World which manifests itself in the universally adopted mathematical truth that the space-time, in the general case, cannot be separated into the space and time in some invariant way [9].

A. Einstein in his lectures on the essence of the theory of relativity [10] which he read at the Princeton University in may 1921 accentuated that neither a point of space nor the moment of time, when something happened, possess the physical reality, but only the event itself does. If we proceed from the notion of the space and time as two opposite, mutually complementing forms of the existence of the material World, we can expect that the proper study of the physical properties of its temporal structure, the reality of the World events, would unveil new possibilities and perspectives, essentially new types of interconnection of phenomena and essentially new methods to change the condition of substance.

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