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Theoretical Basics of Experimental Phenomena.

Over the course of latter decades, tens of unexplainable microscopic and macroscopic effects in natural sciences and especially in physics and biology have been revealed and investigated. It should be emphasized that a large part of these phenomena were demonstrated by objects having spin or angular momentum.

Probably the first researcher who experimentally detected the unusual effects associated with torsion was a professor of the Russian physical-chemical society, N.P.Myshkin, who at the end of the nineteenth century conducted a series of experiments using scales [1]. These experiments were successfully repeated in the 1960s by professor N.A.Kozyrev and V.V.Nasonov and later by V.S.Belyaev, S.P.Mikhailov, A.G.Parkhomov and others.

In the 1940s, the soviet astrophysicist N.A.Kozyrev proposed that the rotation of stars was connected with their energy output. According to the theory developed by N.A.Kozyrev, *time* and *rotation* are closely interconnected. In order to verify his theory, N.A.Kozyrev conducted a series of experiments with spinning gyroscopes. The goal of these experiments was to make a measurement of the forces arising while the gyroscope was spinning. N.A.Kozyrev detected that the weight of the spinning gyroscope changes slightly depending on the angular velocity and the direction of rotation. The effect he discovered was not large, but the nature of the arising forces could not be explained by existing theories. N.A.Kozyrev explained the observed effect as being the manifestation of some "physical properties of time" [2,3].

In the 1970s, in order to verify N.A.Kozyrev's theory, a major research of gyroscopes and gyroscopic systems was conducted by a member of Belarus Academy of Sciences, professor A.I.Veinik. The effect discovered earlier by N.A.Kozyrev was completely confirmed, but in order to explain the observed results, A.I.Veinik developed his own theory. According to this theory, every substance has it's own "chronal charge" defined by the quantity of "chronal" particles which were named "chronons". A.I.Veinik supposed that while the object is spinning, "chronons" are interacting with other "chronons" that surround this object and therefor the weight of the object changes. According to A.I.Veinik's theory, "chronons" generate the so called "chronal" field. A.I.Veinik found experimentally that strong "chronal" fields can be generated by spinning masses. A.I.Veinik measured some properties of "chronal" fields and found that two types of "chronons" exist ("plus" and "minus" chronons). It is important to emphasize that A.I.Veinik concluded that the sign of the "chronon" depended on orientation of it's spin [4].

Reported observations of gyroscope weight variations have been made repeatedly by various researchers in many countries (e.g.[5-7]). Almost in all cases the observed effects were interpreted as the manifestation of antigravitation. In 1989, H.Hayasaka and S.Takeuchi conducted a series of experiments in which the fall-time of a freely-falling spinning gyroscope was measured. They found that the fall-time varied depending on the angular velocity and the direction of rotation. H.Hayasaka and S.Takeuchi have attempted to explain the effect of antigravitation as the manifestation of torsion fields generated by the spinning gyroscope [6].

It should be noted that reports stating that the weight of a spinning gyroscope does not change are also

known. Analysis of these reports shows that experimenters have simply not fulfilled the conditions required to achieve the expected effect. N.A.Kozyrev, A.I.Veinik and other researchers who obsered the change of weight emphasized repeatedly that the rotation must be non-stationary. For instance, N.A.Kozyrev and A.I.Veinik used special vibrations, and H.Hayasaka experimented with moving (falling) gyroscopes.

From the mid-50s to the late 70s, professor N.A.Kozyrev (with V.V.Nasonov) conducted astronomical observations using a receiving system of a new type. When the telescope was directed at a certain star, the detector (designed by N.A.Kozyrev and V.V.Nasonov) positioned within the telescope registered the incoming signal even if the main mirror of the telescope was shielded by metal screens. This fact indicated that electromagnetic waves (light) had some component that could not be shielded by metal screens. When the telescope was directed not at the visible but at the *true* position of a star, the detector then registered an incoming signal that was much stronger. The registration of the true positions of different stars could be interpreted only as registration of star radiation that had velocities billions of times greater than the speed of light. N.A.Kozyrev also found that the detector registered an incoming signal when the telescope was directed at a position symmetrical to the visible position of a star relative to it's true position. This fact was interpreted as a detection of the *future* positions of stars [8].

In the late 1980s to early 90s, astronomical observations using the Kozyrev-type detector were successfully conducted by a group of academics at the Russian Academy of Sciences under M.M.Lavrentiev. While the sky was scanned by the shielded telescope with the detector inside, it registered signals coming from the visible position of each star, the true position, and also the position symmetrical to the visible position of a star relative to it's true position. M.M.Lavrentiev could not give a theoretical interpretation to these facts [9-11]. In 1992 these experiments were successfully repeated by the group of A.E.Akimov at the Main astronomical observatory of the Ukraine Academy of Sciences (Kiev,) and at the Crimean astrophysical observatory (Nauchnyi). The obtained results were interpreted as registration of torsion waves. (As is well known, stars are objects with large angular momentum.) [12,13].

In the course of the latter 50 years there have been numerous reports on anomalous behaviour of spin-polarized particles. In the USSR the groups under V.G.Baryshevsky and M.I.Podgoretsky experimentally determined that when neutrons are passing through spin-polarized targets, a precession of neutrons arises. The measured magnitude of precession has shown that the field which caused that precession has to be thousands of times stronger than the magnetic field of the target's nuclei [14]. In the USA the A.D.Krisch group repeatedly observed anomalies produced by spin-polarized protons [15]. In France, in experiments with ^{3}He, it was found that the heat-conduction of helium unusually depends on the state of nuclei spins [16]. (This list can be easily continued.)

In 1977, A.C.Tam and W.Happer experimentally discovered that two parallel circularly polarized laser beams mutually attract or repel depending on mutual orientation of their circular polarization [17].

In 1966 the K.N.Perebeynos group demonstrated an experimental communication system in which the transmitter and the receiver were constructed as rotating masses. Transmitted information could be recieved even when the receiver was shielded by massive screens. The method applied was interpreted as the generation and reception of gravitational waves [18].

In spite of the seeming diversity, all of the experiments considered above have a certain resemblance: all of the mentioned effects are demonstrated by objects with spin or angular momentum. As was already noted, probably the first experimenter who made a major investigation of effects demonstrated by spinning objects was N.A.Kozyrev. It is also necessary to note A.I.Veinik's research work. A.I.Veinik

made tens of types of generators based on rotating masses. These generators could change their weight (*Very slightly*. If a mass ~1 kg is rotating with the angular velocity ~ 20.000 rpm then the "inner force" ~30*10 $^{-5}$ N.), and their "chronal" fields could affect practically all physical and biological objects and could not be shielded by "usual" screens [4]. It is also useful to note V.M.Yurovitsky's patented generators which are based on spinning magnets. V.M.Yurovitsky was the first who pointed out that many phenomena could be explained as a result of manifestation of long-range fields generated by spin or angular momentum density. Later generators based on mechanically rotating magnets were developed by V.V.Bobyr and many others. As a result of a series of experiments conducted in the Institute of Material Research ("Institut problem materialovedeniya" in russian) (Kiev, Ukraine) it was established that the emanation produced by this sort of generator is able to change the inner structure of any substance (it's spin structure). It was also established that an identical change of the structure of various substances can be achieved by "sensitives" ("psychics,") and could not be achieved by the use of other known technologies. The emanations of the developed generators was interpreted as torsion radiation [19].

In other series of experiments conducted in the Institute of Material Research, the influence of the torsion radiation on various photographs was investigated. It was established that by the use of this method it is possible to transmit information from one point of space to another [20]. (Probably the first researchers to apply this method were Albert Abrams, Curtis Upton, William Knuth, and George De La Warr.) The experimental research conducted in the Institute of Material research and at other scientific organizations was managed by the Center of non-conventional technologies under the USSR Science and Technics State Committee. These investigations were based on the so called "Theory of physical vacuum" developed by russian physicist G.I.Shipov.

G.I.Shipov used a geometry of absolute parallelism (A_4) with an additional 6 rotational coordinates, and on the strict level it showed that the movement of any object should be described by 10 movement equations but not by 4 equations as it is in Einstein's GR. From Shipov's vacuum equations, every known fundumental physical equation (Einstein's, Young-Mills', Heisenberg's, etc.) can be deduced in completely geometrised form. G.I.Shipov showed that besides the two known long-range physical fields - electromagnetic and gravitational - there exists third long-range field possessing significantly richer properties: the torsion field. The torsion field is an extremely unusual entity. First of all, the upper limit for the speed of torsion waves is estimated to be not less than 10^9 c, where c is the speed of light. Secondly, torsion fields are able to propagate in a region of space which is not limited by the light cone. That means that torsion fielda are able to propagate not only in the future but in the past as well. Thirdly, torsion fields transmit information without transmitting energy. Fourth - torsion fields are not required to follow the superposition principle [21].

Torsion fields are generated by spin (considering classical spin [22,23]) or by angular momentum. There exist both right and left torsion fields (depending on the spin orientation). Since all substances (except amorphous materials) have their own stereochemistry which determines not only the location of atoms in molecules but also determines their mutual spin orientation, then the superposition of torsion fields generated by the atomic and nuclear spins of each molecule determines the intensity of torsion field in the space surrounding each molecule. The superposition of all these torsion fields determines the intensity and spatial configuration of the characterist torsion field of that substance. Thus each substance possess its own characteristic torsion field.

The property which is open to influence by torsion fields is spin. (We should note that the spin-torsion interaction constant is equal to 10 $^{-5}$ - 10 $^{-6}$. This constant is less than the constant of electromagnetic interactions, yet much greater than the constant of gravitational interactions.) Thus the structure of the torsion field of every object can be changed by the influence of an external torsion field. As a result of

such an influence, the new configuration of the torsion field will be fixed as a metastable state (as a polarized state) and will remain intact even after the source of the external torsion field is moved to another area of space. Thus torsion fields of certain spatial configuration can be "recorded" on any physical or biological object.

Since every permanent magnet possess not only oriented magnetic moments but also classical spins orientation as well, then every permanent magnet possess it's own torsion field. (This fact was first experimentally discovered by A.I.Veinik.) Understanding this important property of magnetic fields allows us to understand a variety of phenomena, for instance the phenomenon known as "magnetization of water".

The following fundamentally important fact should be emphasized. In the framework of the theory of electro-torsion interactions, it is shown that if electrostatic or electromagnetic fields exist in some region of space, then there *always* exists torsion fields in that region of space. Electrostatic or electromagnetic fields without a torsion component do not exist. On the strict level this is shown by G.I.Shipov [24]. Strong torsion fields are generated by high electrical potentials and by devices with organized circular or spiral electromagnetic processes. (Probably the first researcher to investigate torsion fields by this type of generators was Nikola Tesla. In Russia, similar results were obtained by S.V.Avramenko and others.)

Torsion fields can be generated as the result of the distortion of geometry of pthe hysical vacuum. Every object with a certain surface geometry will simultaneously generate left and right torsion fields of a certain configuration depending on the geometry of the object. This fact can be detected by various types of physical, chemical and biological indicators. This type of manifestation of the torsion field was repeatedly observed by numerous researchers: A.I.Veinik, Yu.V.Tszyan Kanchzhen, A.A.Beridze-Stakhovsky, V.S.Grebennikov, I.M.Shakhparonov and many others in Russia and various researchers in other countries [25-31]. Later an experimental investigation of the torsion fields generated by objects with different geometry of surface was conducted by the group of A.E.Akimov at the Physics Institute of the Ukraine Academy of Sciences and at Chernovitsky University [32].

Another kind of torsion generator employs a combination of the above described principles. For instance, the combination of high-frequency electromagnetic oscillations and topological effect ("form effect") is used in the generators developed by Yu.V.Tszyan Kanchzhen. The combination of high electric potential and topological effect is used in the device made by A.I.Veinik and in the device described in the patent [27]. The combination of magnetic fields and high-frequency electromagnetic oscillations is used in W.Kroppa's patented generators. Rotating magnetic fields are used in V.M.Yurovitsky's patented generators.

The extremely unusual properties and possibilities demonstrated by torsion field generators allowed the development of new approaches to the interpretation of various phenomena, including ESP and PK. From the late 80s till the late 90s, major experimental investigations were conducted that confirmed the theoretical predictions. It was established that torsion generators allow us not only to replicate all "phenomena" demonstrated by so called "psychics," but they also are able to demonstrate effects that were never demonstrated by any "psychic".

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