SHIPOV ON TORSION

Dr. Gennady Shipov on Torsion Physics & BPP

By Tim Ventura & Dr. Gennady Shipov, December 1st, 2005
With revision by Paul A. Murad

Dr. Gennady Shipov is one of the world's leading physicists in Torsion-Physics research. He joins us to talk about the fundamentals of this emerging branch of scientific discovery, and provides some unique insight into how we can turn the fundamental forces of nature towards the goal of advanced propulsion...

AAG: I think that most people vaguely connect the term "Torsion Field" to the idea of spin, but this is an aspect of science that the general public isn't very aware of. Can you offer a simple explanation that might help us visualize what exactly these torsion fields are, and how they may be important to space-propulsion?

Shipov: It is a complicated question. Simultaneously it is the most important.

We'll start with the differences in my approach to torsion fields - in my work torsion fields are not simply an addition to existing physical fields. Torsion fields play a major role in the *Theory of Physical Vacuum* and their introduction in science demands a change of the scientific paradigm. The substantive provision of this new scientific paradigm is that any motion is rotation that is equivalent to the statement that any motion within the Nature involves acceleration.

Even before creation of Newton's mechanics, the French scientist Rene Descartes stated that any motion is rotation. Our common sense and life experiences hardly perceive this statement as we every day notice linear motion in automobiles. However, if we are very attentive, we will notice that automobiles always move with acceleration. Even then, when the speedometer of the automobile shows constant motion, on a car compensated forces are operating. In a direction of the car's motion, it is the force of draft of the motor that acts against the direction of movement with the forces of friction and air forces of motion resistance.

Dr. Gennady Shipov: World-renowned theoretical physicist.

If one makes very exact measurements of the action of these forces, one can find that they never really compensate each other, therefore at any moment the automobile undergoes an acceleration or deceleration.

UVITOR: The AG SkyCar.

It is a simple example from mechanics that convinces us that in reality there is no inertial system of reference. Einstein constantly remarked about the lack of an inertial system that is at rest or moves rectilinearly as all of the objects in the world interact with each other and undergo acceleration due to these forces. But as soon as accept this conclusion, that any motion is accelerated, how this motion follows from the basic laws of the Special Theory of

Relativity, and any motion appears as rotation. It also means that Descartes was right.

It may sound strange, but until now physics could not describe the rotational (accelerated) motion correctly. Moreover, without the description of torsion fields it in general cannot be made.

Approximately 150 years ago the French mathematician F. Frene was the first to introduce the concept of torsion of any curve. In physical applications the torsion of a curve has received an interpretation as its own rotation of a particle that goes along a given curve. Already during those earlier times scientists have connected torsion with the rotation associated with a material object. If the curve possessing torsion sweeps up a certain surface or volume, we receive the curved and twisted surfaces on three-dimensional spaces. Approximately 120 years ago the Italian mathematician G. Ricci had developed a mathematical theory for the description of the geometry of spaces that possess both Riemann curvature and torsion. In 1922 the French mathematician E. Cartan has specified the connection of Ricci torsion with own angular momentum of matter. Four years after E. Cartan introduced (in addition to Ricci torsion) the so-called 'Cartan torsion'. Now Cartan torsion fields are widely used by theorists in various physical theories (there are some thousand papers on this subject).

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G. I. Shipov

A THEORY
OF PHYSICAL
VACUUM

A New Paradigm

Moscow 1998
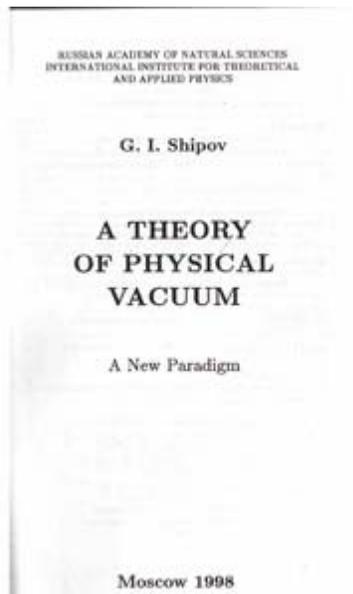
The Book: Shipov's extensive "Theory of Physical Vacuum".

Albert Einstein publishes a series of articles in which he uses Ricci torsion (torsion of geometry of absolute parallelism) as the basic physical object for construction of the Unified Field Theory of Gravitation and Electromagnetism in 1928. He conducts extensive correspondence from E. Cartan on this question.

Thus, the logic of my reasoning is thus: *"Any motion is rotation-- Rotation of matter generates space - time Torsion ---Torsion of space - time is also described by Ricci torsion."*

Certainly, the main problem is to find the correct physical interpretation of a Ricci torsion field. I argued so. As rotation of matter in mechanics generates forces of inertia (centrifugal, Coriolis, etc.), therefore it is logical to connect torsion fields with the inertia field capable of generating inertial forces. Einstein had formulated a strong principle of equivalence that puts an equal sign between the action of a gravitational field and an inertial field. However, in Einstein's theory the strong principle is not carried out. In his theory the gravitational field generates curvature of space - time and the field of inertia does not. I managed to overcome this difficulty when I started to describe fields of inertia by using Ricci torsion. It is interesting to note that the first scientists who has seen this result, was the American mathematician (instead of the physicist) Robert Kiehn.

Ricci torsion fields allow a solution to the problem of geometrization of the right part of the Einstein's equations energy-momentum tensor that Einstein tried to solve during 30 years. (This looks at the Theory of Relativity as a geometric theory when considering the curvature of space-time).

This result has been highly appreciated by physicist from Israel by Moshe Carmeli. Here is how he writes about it:

"Dr. Shipov has generalized the ordinary four-dimensional Relativity Theory. He showed that the right-hand sides of the Einstein field equations for gravity and the equations of general-relativistic electrodynamics can be geometrized successfully, if one uses not a Riemannian geometry but the geometry of absolute parallelism. The new field equations he suggests were written as:

$$\mathbf{R}_{jm} - \frac{1}{2}\mathbf{g}_{jm}\mathbf{R} = \nu\mathbf{T}_{jm} \tag{1},$$

Where ν is a constant, and the energy-momentum tensor is geometric and given by:

$$\mathbf{T}_{jm} = -\frac{2}{\nu}\left\{\left(\nabla_{[i}\mathbf{T}^i{}_{|jm]} + \mathbf{T}^i{}_{s[i}\mathbf{T}^s{}_{|jm]}\right) - \frac{1}{2}\mathbf{g}_{jm}\mathbf{g}^{pn}\left(\nabla_{[i}\mathbf{T}^i{}_{|p|n]} + \mathbf{T}^i{}_{s[i}\mathbf{T}^s{}_{|p|n]}\right)\right\}, \tag{2}$$

$$\mathbf{T}_{[jm]} = 0. \tag{3}$$

One then finds that the equations (1) are the Einstein's equations if one assumes that v=8πG/c⁴, or are the equations of general-relativistic electrodynamics if one assumes that v=8πe/mc⁴. As can be seen, the constant v in the generalized field equations (1) will be canceled out if one substitutes the energy-momentum tensor (2) into equations (1). Accordingly, the generalized field equations (1) contain no physical constants. This is, of course, the usual procedure for geometrization of the energy-momentum tensor and its constituent fields. We have not included in the above a very brief description of Dr. Shipov's theory, all the important details, and one should refer to his book for extensive details, which seem to be of high interest.

I find the work of Dr. Shipov quite original and creative. His ideas about "Universal Relativity" and "Physics Vacuum" are greatly interesting, and are excellently developed by him to a theory, which seem as a continuation of Einstein's work." – Dr. Moshe Carmeli

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"Changing rotation inside a mass makes it possible to change its inertial properties. It is the equation for a jet motion without rejection of any mass."

From the formula (2) it follows that the rest mass of any object is determined by a torsion field Ò or by rotation of its parts. Changing rotation inside a mass makes it possible to change its inertial properties. In this case the inertial mass depends upon time and we can create a system that moves according to the equation **[m (t) dv/dt =-vdm/dt]**

In the right-hand side of this equation we have the action of the inertial force.

Differently, the new theory shows that it is possible to change a rest mass of an object, operating upon by fields and forces of inertia, i.e. by torsion fields.

Thus, the logic of creation of an inertial propulsion system is thus: **"***Any motion is rotation ---- Rotation of a matter generates a space-time Torsion ---Torsion of space - time is described by Ricci torsion --- Ricci torsion is an inertial field-----the rest mass of any object is determined by its inertial field---- operating by fields and forces of inertia inside of mass we can create*

inertial propulsion system which moves according to the equation **[m (t) dv/dt =-vdm/dt].** *It is the equation for a "jet motion without rejection of any mass".*

AAG: As I understand things, there are several avenues of research into Torsion Physics, but your research continues to captivate the attention of the physics community. Can you tell us a bit about what makes your research so different, and about some of the concepts that you work with that are generating this excitement?

Shipov: In physical applications scientists use two kinds of torsion - Ricci torsion and Cartan torsion. The majority of physicists investigate Cartan torsion. They came to the conclusion that Cartan torsion only brings very small contributions to understanding physical phenomena, therefore Cartan torsion is impossible to observe experimentally.

In my work, I use torsion of space in absolute parallelism (Ricci torsion), which in physical applications for the first time was investigated by Albert Einstein. In experiments with inertial propulsion I have shown that Ricci torsion generates fields of inertia. On the other hand fields of inertia generate Riemann curvature (a strong principle of equivalence). But fields of inertia can be operated with the help of using rotation of material bodies and, it means, to operate upon the curvature of space-time. The elementary device which allows one to operate by curvature of space – time would be a four-dimensional gyroscope. It is the device that I investigated while in Thailand.

This letter of Canadian physics Bill Page will possibly help understand more deeply my work:

"Although Shipov uses the geometry of teleparallelism (absolute parallelism) in his theory, I think it is not correct to think of Shipov's theory as a "teleparallel gravity" theory. In fact in Shipov's theory gravity itself is explained by Riemann curvature that comes from a Levi-Civita connection - just like in the classical theory.

The assumption of teleparallelism is used quite differently to determine another connection - the teleparallel connection - which includes a non-zero contorsion component with a non-zero torsion. But this torsion does not play a role on the LHS of the field equations - only on the RHS where it refers to the inertial properties of matter, not to gravitation.

I think the fact that Shipov recognized that *both* Riemann curvature (not torsional or Cartan curvature!) and torsion could be defined in the teleparallel formalism was a major innovation.

I want to add a further footnote to the above:

Having recognized how to construct Riemann curvature in a teleparallel geometry, one could take the view that the structural equations are the "proof" that a teleparallel theory of gravitation in terms of torsion is equivalent to the classical formulation of relativity. But I think this misses the main point. Shipov recognized that one could take the structural equations themselves as the proper geometrization of the field equations. Then from teleparallelism one obtains a geometric expression for both the LHS and the RHS of these equations." – Dr. Bill Page

AAG: The highly-publicized Gravity Probe B has been collecting data on the "Lense-Thirring" Effect, which relates to relativistic frame-dragging on nearby space due to the Earth's

Do you think that relativistic frame-dragging is related to Torsion, and if so, will this experiment provide any theoretical support for current research in Torsion Physics?

Shipov: No, the effect of Lense-Thirring does not decide the proof of existence of the torsion field. To torsion fields this effect has a rather remote relation.

AAG: Speaking of which, Dr. James Corum has proposed that Einstein's Unified Field Theory may provide support for stories like "The Philadelphia Experiment" or Nick Cook's Nazi-Bell through the use of a metric Torsion Tensor. Do you think that folding-space using Torsion is achievable, and if so, would it provide an explanation for some of these anomalous claims?

Shipov: The metrics which includes the Torsion Tensor has been introduced for the first time in my book: "A Theory of Physical Vacuum ". I have named such metrics the rotational metrics as such metrics describe infinitesimal rotation. In Einstein's theory we have the metrics that describes only infinitesimal translation. I think that the Unified Field Theory now has developed into the Theory of the Physical Vacuum, and in this theory the torsion field plays a basic role. The majority of abnormal experiments, such as experiments of Nicola Tesla, or the Philadelphia Experiment will be repeated, when we shall more deeply study the nature and properties of Ricci torsion field.

"Abnormal experiments such as the Philadelphia Experiment will be repeated when we more deeply study the nature & properties of the Ricci Torsion Field."

AAG: In addition to folding space along its physical dimensions, Corum suggested that Torsion could fold space along the dimension of time leading to discontinues that might allow a person to jump along or from a world-line to different times. Do you think that the ability to modify the time-axis might lead to a method of Faster than Light space-travel, or perhaps even true time-travel?

Shipov: I agree with Jim Corum. Really, new performances about physical time appear in the theory where there is Torsion as Time is a Rotation, and rotation generates torsion. In the future we shall construct a Time Machine and we shall operate time, using our knowledge about torsion.

In the theory of Physical Vacuum, the Primary Torsion Fields there in the vacuum are the space-time vortexes with zero energy and with interaction without energy. For an object, where the energy is equal to zero, it is impossible to formulate a concept of the speed of its propagation. For the usual observer such an object is "at once everywhere and always", i.e. its "speed of propagation" is instantaneous. The creation of primary torsion fields can be considered as a primary polarization of the vacuum according to its spin properties, with right-hand and left-hand fields arising simultaneously. Experiments on creation of artificial torsion polarization of the physical vacuum would introduce in some of its area material objects with various surface geometry, that show right-hand and left-hand primary torsion fields that arise simultaneously. The geometry of space in this case represents a 10-dimensional manifold (4 translational coordinates and 6 angular ones), and its Riemannian curvature are equal to zero, and the Ricci torsion being distinctively different from zero. Propagation of primary torsion fields with "instantaneous speeds" happens on phase portrait of these fields, but not with the help of looking at group velocity, as it occurs with usual physical fields. This phenomenon indicates a holographic structure of torsion fields.

Collecting outcomes allows us to enumerate the main properties of torsion fields obtained as a result of the theoretical analysis of the physical vacuum equations. These are:

1. Information transmission without carrying or expending energy.
2. The speed of propagation is infinite.
3. High penetrating ability.
4. Holographic nature.
5. Ability in a bound state to change energy.

AAG: Even without folding time, another interesting avenue is the propagation speed of the Torsion field itself. Has a velocity for propagation actually been determined, and if so, does it obey the speed of light limit? If it's not limited by c, is it possible that creating a Torsion-Field might allow some form of "pseudo-wormhole" for FTL travel?

Shipov: On this question I have given the answer before.

AAG: Physics, and especially relativity theory, handle the concepts of rotation, angular-momentum, and spin very differently than the idea of linear momentum. I'd say that most people intuitively know that there's something unique about rotation, but probably aren't sure what makes it special. Is Torsion Theory then just a mathematical extension of ideas in physics that began as common observations?

The SkyCar: A concept 4th-dimensional propulsion system by Shipov's company.

Shipov: I already remarked that the description of rotation in modern physics is not fully understood. Put in that it is necessary to introduce the description of rotation into the theory of a relativity involving noncholonomic angular coordinates. In three-dimensional space of such coordinates are three. They are referred to as Euler's corners. For the first time it has been suggested by Moshe Carmeli which has introduced a concept of a theory involving Rotational Relativity into physics and has constructed the Theory of Rotational Relativity which describes rotation of material objects more consistently than it was until now. In Carmeli's theory our space is formed not only by translational coordinates, but also by rotational coordinates. Thus, in Carmeli's theory, space - time has seven dimensions.

Two remarkable results follow from Carmeli's theory:

1. Inertial properties of a rest mass depend on angular velocity due to its rotation.
2. Except for the translational metrics in space - time there should also be a rotational metrics.

After a while I have shown that for the description of rotation in four-dimensional space of translational coordinates, it is necessary to define six angles: three spatial angles and three space-time angles. Therefore, in the theory of Physical Vacuum space-time we have ten dimensions, thus Ricci torsion field provides the necessary rotational metrics.

AAG: Quantum Mechanics demonstrates a number of strange effects like teleportation of quantum-states & distant parallelism that don't seem to have parallels within Relativity Theory. Do you believe that Torsion might be a conceptual "bridge" to allow the observed "Quantum Weirdness" to find its way into macro-scale physics?

Shipov: I think this question is the most important. Recently I have written an article entitled "Rotational Relativity and Quantum Mechanics". It will soon be translated into the English language. In this article, I show in detail that Ricci torsion plays a role of the Bridge between the theory of Relativity and the Quantum theory of a matter. Apparently that mysterious wave function Y of the New Quantum theory = a Matter field = Ricci torsion field. As a Ricci torsion field describes fields of inertia, the quantum mechanics is a way to describe movement of matter through the dynamics of its inertial field. I think that after awhile all abnormal consequences and contradictions of quantum mechanics will be interpreted in a clear language of torsion fields - new physical object. Einstein dreamed of this.

AAG: What are your thoughts about the homogenous physical vacuum versus the inhomogeneous physical vacuum per Dylatov formerly of Novosibirsk? As I understand the difference, the homogenous model suggests that all particles have a gravitic, electromagnetic, and spin-field and are evenly distributed throughout the domain but the inhomogeneous model maintains that differences in these fields occur across boundaries that are defined by anomalies. What does this mean to Torsion research?
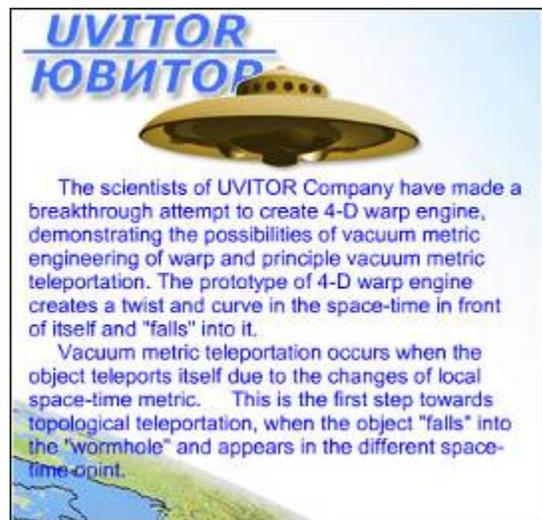
UVITOR Corp: Shipov's startup-company is dedicated to a true Antigravity breakthrough.

Shipov: I will say nothing on this occasion as I am not familiar with these efforts.

AAG: There's a popular tale about N.A. Kosyrev pointing a telescope with a sensor that measuring solar-energy at a point in space. Kosyrev pointed the device at a spinning star and it registered some energy that probably reached the instrument at the speed of light. He then pointed it at the star's actual position and it again registered an energy reading implying that this energy reached the instrument at an instantaneous speed. He then pointed it ahead of the star's position representing the future and also detected a reading. When the experiment was duplicated by Lavrentiev a decade later, the rationale for the latter effects was that the star was spinning at a very high speed and this was due to the torsion field. Can you comment at all on this?

Shipov: Yes, I know about Kosyrev's works in which he has found the radiation going from stars with speeds of more than speed of light. As difficult as this seems, these experiments have been repeated in Novosibirsk by academician Lavrentiev with some of his employees and in Ukraine by doctor Pugach. They have confirmed the existence of superlight signals from stars. I think that this is a torsion signal, but for the final answer suggests that additional research is necessary.

AAG: There have been a number of claims about gravitational-shielding, and it's been proposed that this could be the result of Torsion acting to "uncurve space". The examples that come to mind include Godin & Roschin, Podkletnov, and of course the Searl Effect -- these are all rotating bodies incorporate large magnetic fields & rotation speeds. Is it possible that Torsion may be used to explain some of these claims?

Shipov: It is quite possible, since all devices that you have listed show torsional effects. Everywhere, where there is a rotation there are fields of inertia and hence, Ricci torsion fields. The effects generated by Ricci torsion fields are significant, as they cause great forces of inertia. According to a strong principle of equivalence, forces of inertia are capable of compensating for gravitational forces, i.e. create effects of anti-gravity.

AAG: Assuming that we someday harness Torsion-Fields for propulsion, what kind of vehicle would it produce? Do you think that it might be more of an Antigravity-Effect, or would be perhaps something closer to teleportation?

Shipov: I investigated this issue experimentally and have theoretically described just such a device. I have named it "4-D gyroscope" as it has rotation both in space and in the relativistic space-time plane.
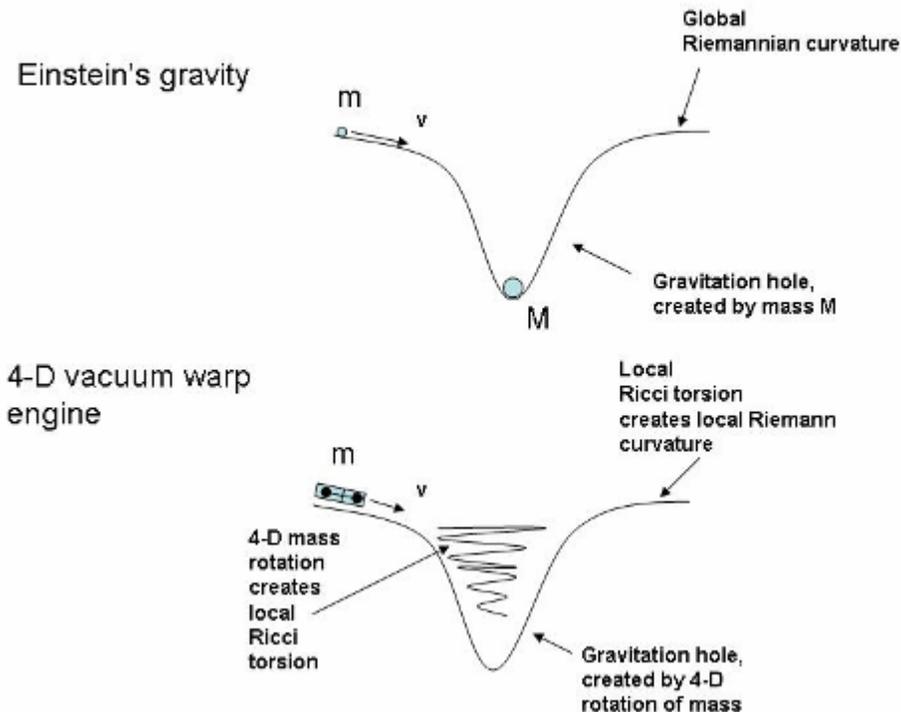
The basic idea is shown in the above figure. In Einstein's theory the gravitational hole where all bodies "are rolled" is created by the central mass M (for example the mass of the Earth). In the

Theory of Physical Vacuum, a gravitational hole creates by Ricci torsion field that is generated by controlled rotation of a matter.

AAG: I've read about several experiments dealing with Torsion, and even seen an advertisement by a company in Moscow that manufactures a "Torsion Detector". Have you conducted any experiments in this area, and are you planning any new experiments in the future?

Shipov: Yes, in Russia generators of electro-torsion fields are created. The truth is that in any advertising in Moscow concerning these generators, I did not see anything that would confuse you. Such generators are used for scientific purposes and in torsion technologies. Now in Russia six kinds of torsion technologies are under development:

1. Torsion transport
2. Torsion metrology
3. Torsion power
4. Torsion communication
5. Torsion medicine.
6. Torsion methods in agriculture

I think that in America there also are torsion generators, for example generator of Hutchinson. Unfortunately, the absence in America of theoretical research in this direction acts like a strong brake holding back the development of Torsion Physics.

AAG: For our audience, interested in learning more about your research, do you have a website or book that they could reference, or is it better to reference your published scientific papers on this topic?

Shipov: I'd like to recommend my book in English – "A Theory of Physical Vacuum". You can buy it online from URSS.RU. My website online is located at http://www.shipov.com, which features a large collection of scientific papers available in PDF format for additional information.

Dr. Gennady Shipov is a world-renowned theoretical physicist living in Moscow, Russia. His education includes both an M.A. and PhD in Theoretical Physics, and his research includes 54 scientific papers, 7 monographs, and numerous prestigious scientific and directorial roles within the Russian scientific establishment. He is also a founding member of the Russian Association of Gravitational Sciences, and currently serves as the Director of the Science Center of Physics of Vacuum in Moscow. You can visit his website online at: http://www.shipov.com