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Evidence of Field Torsion through a Hall's Sensor with Dynamic Magnetic Dilaton

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ABSTRACT

Torsion is an observable and invariant, which in geometry is a second curvature. In field theory, the torsion is the better evidence of the birth of gravity, the interaction between electromagnetic fields and gravitational fields or matter presence from microscopic level and its different effects until our days with the gravitational waves that are echoes detected from big bang in astronomical observatories. Through electronics is designed an analogue of torsion measurement, considering the electronic signals detected by a Hall sensor gauge to detect the magnetic field of a dilaton (gauge particle of magnetic nature). This moves along a spiral trajectory with certain constant torsion as well as variable torsion, where curvature energy can be obtained through electromagnetic fields. However, in the case of the torsion, is required a trajectory whose torsion is detectable and measured by fine instruments. A consideration important raised of some investigations using Hall sensors gauged to different ranges of magnetic field is the obtaining of the torsion as energy spectra whose energy density is a spectral torsion determined through the energy curvature developed in the spinor-twistor framework, used to evidence the torsion in sources and holes in the space-time, for example.

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Revising, what is in the Current Books and Courses on Geometry and Mechanics

In the geometry study, the torsion is an invariant of curves and surfaces which establish how a surface twists about a curve on the surface (see the figure 1). The companion notion of curvature measures how moving frames roll along a curve without slipping or twisting. In this case is conformed a double curvature. In the case of curves, the torsion stays described how sharply it is twisting out of the osculating plane.

Also, as invariant of coordinate transformation, the torsion is defined as the torsion tensor which is associated to any affine connection. The torsion tensor is a bilinear map of two input vectors X, Y , that produces an output vector $T(X, Y)$, representing the displacement within a tangent space when the tangent space is developed (or "rolled") along an infinitesimal parallelogram whose sides are X, Y , precisely.

In mechanics, simply is the measure of twisting deformation of an object (of solids or materials) due to an applied torque, resulting in shear stress and strain. The fundamental equation in analytic or rational mechanics is $d\Omega = \theta \wedge \omega + \omega \wedge \Theta$ [1].

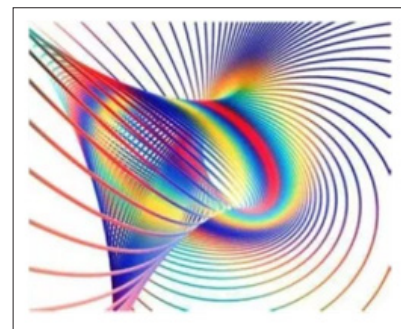


Figure 1: Set of Curves Twisting Defining Torsion of a Surface Σ .

However, the torsion as field observable in the Universe, appears also as geometrical invariant of geometric scenarios and as cornerstone of much microscopic interactions between gravitational field and electromagnetic field. Likewise, sidereal magnetic fields give shape to galaxies whose spiral arms are oriented in these magnetic fields. The energy production in the Universe, sufficient to generate inflation or expansion of the Universe, come from interaction of particles of matter and anti-matter, which go passing different steps until produce the heavy particles of matter called Hadrons, and appearing of the dark matter, from the dark energy produced by spin waves passing to gravitational waves until matter such as we know [2].



Figure 2: Galaxy Whose Arms are Oriented on the Magnetic Force Lines of an Enormous Sidereal Magnetic Field.

Other aspects in the Universe as singularities of the space-time, this Universe modeled as a complex Riemannian manifold, the called black holes whose madness force can be exposed as effect of the field torsion evidence studied considering the singularities or even the sources of matter in the Universe as are the quasars or neutron stars; can be interpreted as poles and can be exposed their spectrum through an extrapolation of signal torsion considering Conway integrals on these fields, where is used a duality of the quantum mechanics of field/particle [3]. In this point, is used framework of geometry which includes the managing of singularities; holes and sources of the space-time called twistor geometry.

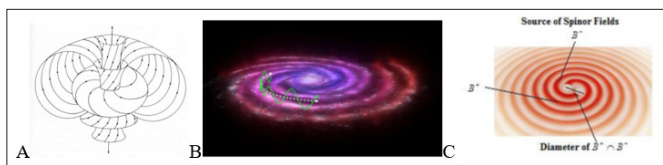


Figure 3: A) Twistor Space B) Gravitational Waves Travel in a Galaxy C) Spinors and Generating of Gravitational Waves, Considering the Center as a Pole or Singularity (hole or source) in the Space-Time.

Then what doesn't Appear in Current Books and Courses

How generalize the torsion concept to that this enclose and included all cases of torsion in mechanics, geometry, cosmology, even in electronic devices as signals? The answer is yes. Everything starts in the year 2001, with a great work on the study of curvature of a Universe, treating of generalize the curvature concept to a more widely concept that could be used to detect curvature through energy signals in the Universe and measure this curvature of the Universe, at least locally. Likewise arise the theorem that generalize the concept of curvature given in differential geometry to a more general context:

Theorem (F Bulnes): The curvature can be generalized as tempered distribution or generalized function considering an smooth embedding of submanifold (cycle) Σ , of the Universe M , (Riemannian manifold) in the topological vector space $D'(M)$.

Also, others studies in integral geometry obtain many and several formulas, corollaries and lemmas from this theorem, even also is generalized the theorem 2. 1, obtaining results useful in the microscopic aspects of the Universe, that due to that is searched create a Universe theory that could include microscopic aspects of the field theory and the relativity theory considering the framework suggested by Penrose with his twistor geometry [4]. Also are considered little variations from the microscopic level of energy invested by a field (as a string or particle that deforms the space-time in a micro-locality) that need to deform the space-time to

create curvature. This energy is measured in a corresponding Hilbert space in the local geometrical structure of a complex or real Riemannian manifold used in the modeling of the space-time including singularities.

Likewise, is established the following conjecture:

Conjecture (F Bulnes, I Rabinovich): The curvature in spinor-twistor framework can be perceived with the appearing of torsion and anti-self-dual fields (see the figure 4) [5].

Then using a similar backgrounds and extrapolation of the many concepts demonstrated in other papers and exposition at international level is obtained the following theorem [5,6].

Theorem (F Bulnes, Y Stropovsvky, I Rabinovich): We consider the embedding

$$\sigma: \Sigma \rightarrow (\mathbb{T}(S) \otimes \mathbb{T}(S))^*$$

The space $\sigma(\Sigma)$, is smoothly embedded in the twistor space

$(\mathbb{T}(S) \otimes \mathbb{T}(S))^*$ Then its curvature energy is the energy given

in the interval $M_N \geq A_{\alpha\beta} Z^\alpha I^{\beta\gamma} \bar{Z}_\gamma \geq 0$. Proof [5].

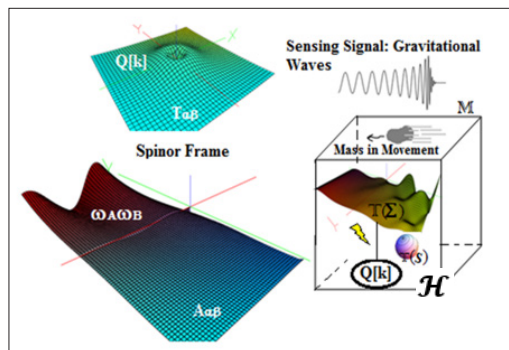


Figure 4: Obtaining of Field Torsion Evidence using the Kinematic Tensor $A_{\alpha\beta}$, the Twistor and Spinor Frameworks.

The before results with other results obtained in another direction on applications to create and design a curvature sensor, is obtained the following theorem which will have high importance to the study of the singularities and their spectra in the space-time.

Theorem (F Bulnes, I Verkelov, Y Stropovsvky, I Rabinovich): Spinor wave $S^{AA'}$, in the non-commutative ring algebra (Clifford algebra type) has as *Spec*, in the kinematic-twistor space-time as rotating embedding surfaces (waving) in the \mathcal{H} - space given by $\prod_{AA'}$. Proof [5].

The microscopic contribution is high-lighted, and considered the principal source of the torsion as field observable in all phenomena where gravitation effects through of spins of matter particles interact with the electric charges to produce torsion. This microscopic torsion signals have their perception and measure in a quantum state space called Hamiltonian manifold, in a topological and geometrical sense. The screw effect that undulates the space-time is clear evidence of the torsion existence, more than of the observable space-time (see the figure 5A).

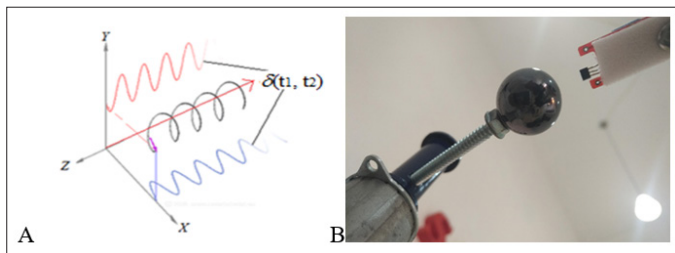


Figure 5: A) Screw Effect B) Magnetic Dilaton in a Spiral Movement Interact with the Electric Field of a Hall Sensor in an Electronic Device to Demonstrate in Laboratory the Existence of the Field Torsion.

Also is incursion the evidence exploration of the torsion and its measurement with fine electronic devices, at least in the dynamics part and the demonstration on the interaction between the gravitational field (field due to the matter prescience) and electromagnetic fields through a magnetic dilaton (magnetic gauge particle) considering a Hall sensor to evidence the torsion signals in the ω^A, π , at least in a local space (see the figure 5B) [6,7,8].

Spectral Torsion Representation: Clear Evidence on Torsion Appearing in the Singularities of the Space-Time

We consider the twistor-spinor framework and re-write the Cauchy integrals type in the language of twistor fields and spinor to construct twistor functions which can be determined in a spectral space through its the Fourier transform [3].

Likewise, we consider the spinor-twistor framework, because is the more adequate to involve the microscopic deformations and undulations that the sources and holes (singularities in the space-time) produce to deform the space. Then due to [3, 5] we can consider the function ξ^A , of parameter s, and twistor $(\omega^A, \pi_{A'})$, as

$$\xi^A(s) = \omega^A - iy^{AA'}(s)\pi_{A'}$$

Then ω^A , can form a twistor function $f(\omega^A, \pi_{A'})$, by performing the contour integral

$$f(\omega^A, \pi_{A'}) = \frac{1}{\pi i} \oint \frac{\alpha_A \beta^A \rho(s) ds}{\alpha_B \xi^B(s) \beta_C \xi^C(s)}$$

Likewise, in this treatment, the twistor function is the curvature energy function, which represents the energy created in the microscopic level to deforms of space-time, and considering coordinates systems A,B,C, the permits the transformation of these tensors, the twistor function will be the curvature energy expressed twistorially and through the use of the Fourier transform to spinors:

$$\kappa(\omega^\gamma, \pi_{\gamma'}) = \int_{-\infty}^{\infty} \kappa(\pi_\gamma, \pi_{\gamma'}) e^{-\omega^0 \pi_0 - \omega^1 \pi_1} d\pi_0 d\pi_1$$

Then we consider the theorem 2. 1 [6] on the agitation (undulations) of the space-time produced by the torsion in the screw effect. Then the torsion energy that has the same spectra than the curvature energy satisfies

$$\begin{aligned} \tau(\omega^\gamma, \pi_{\gamma'}) &= \frac{c}{2\pi} \int_{-\infty}^{\infty} \int_{-\infty}^{\infty} 2\pi \{K(\pi_\gamma, \pi_{\gamma'}) \delta(\omega^\gamma, \pi_{\gamma'}) d\pi_0 d\pi_1 \\ &= \frac{2\pi c}{2\pi} 2\pi \kappa(\omega^\gamma, \pi_{\gamma'}) \delta(\omega^\gamma, \pi_{\gamma'}) \\ &= \pm 2\pi \cot \Psi \kappa(\omega^\gamma, \pi_{\gamma'}) \delta(\omega^\gamma, \pi_{\gamma'}) \end{aligned}$$

Where is evidenced the existence of torsion in a twistor function. Then the torsion involves spinors which defines the undulations in the space-time. The source is all field $\phi_{A'B'...C'}$ which by the lemma 3. 1 was established as a (linearized) gravity solution in the space-time, implying an important space-time relationship between electromagnetic, scalar and gravitational fields. These are the gravitational waves [8].

The supermassive object is the singularity of the space-time \mathbb{M} , which deforms \mathbb{M} , undulating it.

Others Developments on Field Torsion

The explained in the before section open on the following conjectures in the exploration of the Universe [8].

Conjecture (F bulnes): Any source or hole that displaces and rotates around its axis in the space-time generates torsion.

Also,

Conjecture (F Bulnes): The torsion existence in the space-time induces gravitational waves in a complex projective bundle of the space-time.

The last conjecture 4. 2, refers to the fact of that these microscopic undulations are projections of microscopic effects of the torsion from that start the interaction of electromagnetism with the matter particles. Then are produced gravitational waves that are the composition of these undulations.

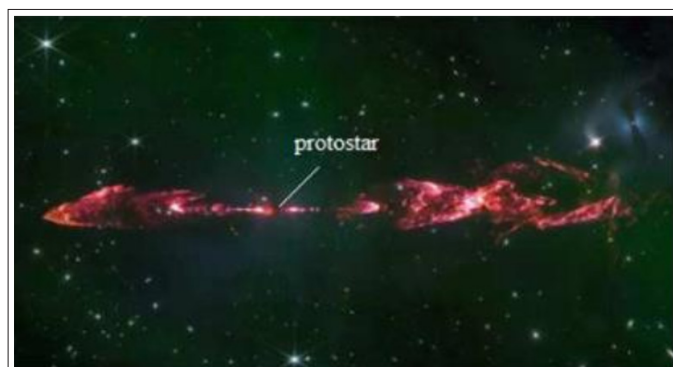


Figure 6: JWST-Telescope's Image of the Protostar, which is Hidden. However, there, where has been Located there is an Object Rotating to High Velocity and Detecting a Big Energy Density. This does that the Protostar can be Detected, further that this has a Dense Rotating Disk Gas and Dust. This Confirms the Existence of Torsion by the Conjecture 4. 1. Also, can be seen the Reddish Pink Jets Which Shoots in Opposite Polar Directions [8].

Some torsion indicium in the Universe can be obtained in the sidereal objects directly of the rotations and high production of gas dense rotating disk gas and dust (see the figure 6).

Also, some developments we have in the electromagnetic propulsion, where the reactor of the possible vehicle is governed by field torsion and can be designed a control of electromagnetic

plasma by curvature energy of magnetic type. The magnetic field is generated in the blue central part of the vehicle (reactor) and establishes the spin direction of the movement geodesics of the vehicle to displace it (is to say deflects de electrical current inside the reactor).

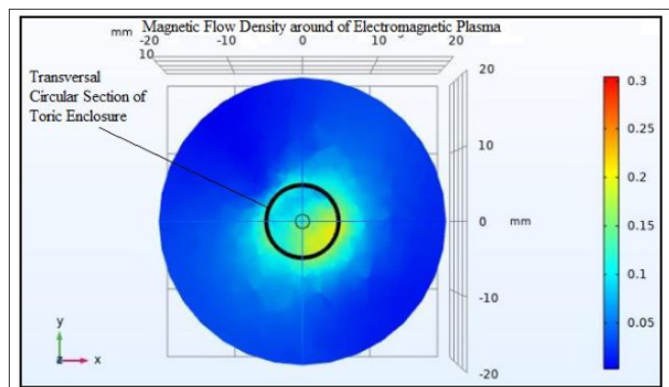


Figure 7: Magnetic field from the Neodymium Magnet which is perpendicular to the direction of the current. The most high Magnetic Field Intensity is found in the Soft Blue and Yellow. This will do that the Plasma be Kept in the Center inside the Torus Enclosure. Eight Neodymium Magnets are Used.

Conclusions and Applications

In this short lecture on the torsion research, we can give a conclusion very important on this study aspect:

a) A 2-dimensional model of spin-waves generated by the magnetic dilaton, from the observations obtained in the electronic experiments and using the infinity of the space-time through of projective space PM. Here we used a magnetic dilaton that moves in a cylindrical spiral trajectory (see the figure 8A and 8B).

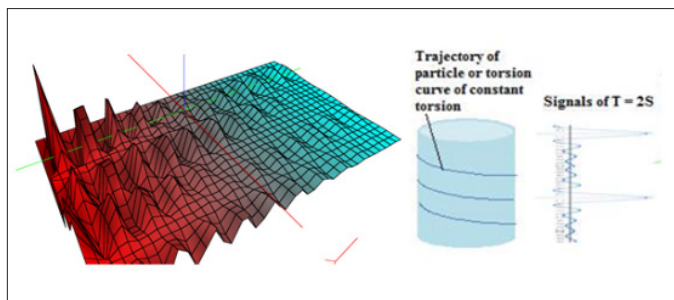


Figure 8: A) 2-Dimensional Surface of Spin-Waves B) Magnetic Dilaton Moves in a Cylindrical Spiral Trajectory [7,8].

b) In the analysis charts is showed indicium of Torsion by the Type of Signs, which are

$$\left\{ \frac{\sin \omega L}{\omega L}, \frac{\sinh \omega L}{\omega L}, \frac{\cos \omega L}{\omega L}, \frac{\cosh \omega L}{\omega L} \right\}, \forall L = \frac{2\pi n t}{\omega L}, T > 0.$$

c) Indirect detection of the gravitational waves, although must use technology of the quantum electronics.

d). Demonstration of the tensors or invariants (mathematical objects) $T_{\alpha\beta}, S_{\alpha\beta}, A_{\alpha\beta}, I_{\alpha\beta}$, and $\mathfrak{T}_{\alpha\beta}$.

The future technologies will have necessary consider the torsion as a fundamental part of their design and creation, for example, interstellar jump in the travels though the Universe, in the teleportation process and information to these travels can be possible. The quantum communication, where this communication will be processes in space of more dimensions, and will consider the spin-waves or microscopic waves deduced of these come from of electromagnetic sources whose field torsion control these communications. Design of reactors controlled by torsion and curvature in different levels of control and feeding, to create machines with energy to one thousand years. The design and creation of advanced devices of quantum electronic/positronic or spintronic nature to control the mind and brain. In nanomedicine the creation and design of spintronic and radionics devices of total cure of all organic sickness, even the mental sickness. For last, the complete understanding of the Universe; in its born, evolution and term of this [9].

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