Theory of Everything by illusion

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Abstract

The Theory of Everything is The Holy Grail of Science. Scientists all over the world are searching for it. Today only three out of four known forces are somewhat unified. Gravitational interaction is a freak without adequate explanation. This paper shows that there is an adequate theory for it. As a bonus, paper presents The Theory of Everything. Presented theory is testable.

Keywords: Theory of Everything, Unification, Classical spinning particles, Antimatter

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Contents

List of Figures

Theory of Everything by illusion

Theory of Everything by illusion (**ToEbi**) demonstrates that gravitation, strong interaction and electromagnetic interactions are generated from the same phenomenon and they are distributed by tiny force transfer ether particles (**FTEPs**). ToEbi gives equations for force calculations which apply in scale from atomic to astronomical. Theory of Everything by illusion is based on two hypothesis:

- Big Bang created very tiny spiked sphere-like objects (physical particles) which vary in sizes.
- Gravitation, strong interactions and electromagnetic interactions between particles or system of particles are purely mechanical (particle collisions and/or particle rotation).

Early Universe formatted particles as we know today. Only tiniest force transfer ether particles (FTEPs) are not detected. These tiniest particles create force transfer ether (**FTE**) into the universe. All particles rotate (due to Big Bang) and therefore generate movement into FTE. Rotation is the key concept in order to generate movement into FTE but it's not necessary in order to experience FTE. Moving object experiences surrounding FTE and reacts with it.

Force transfer ether particles

The first hypothesis stated that Big Bang created a very tiny spiked objects (physical particles) which vary in sizes. Current physics can detect many of these particles, like electrons. Exact shape is not known and that's why we need the first hypothesis. Every particle has tiny spikes. One may think that these spikes are actually the raw material from Big Bang. Because high pressure spikes got entangled with each other and thus created various spiked particles.

At first the smallest particles (FTEPs) survived the pressure. After a while, other particles emerged, like electrons.

From the first hypothesis we can explain for example phenomenon like faster than light breakdown of interference pattern in the double slit experiment. Moving photon generates waves propagated through FTE. Because of the spikes, FTEPs are connected to each other. This pure physical connection causes interference pattern to disappear instantly in case of blocking or in some other way observing slits in the experiment.

Metric

ToEbi is based on spinning particles and their properties. In order to calculate things, within any physics theory, we have to define second. Contemporary definition based on atomic events is an excellent choice. Usage of atomic clock ties the concept of second elegantly with a dynamic system called universe.

During one second, for example, photon moves a certain distance and electron spins n times around its axis. Spinning phenomenon provides also

the basis for different interactions e.g. gravitational interaction (experienced by mass). All these units, second, kilogram and meter are linked together.

Due to the linkage we postulate **ToEbi metric**

$$\frac{kg}{m * s} = c \text{ (constant)}$$

Energy

What attributes contribute to particle's energy at rest (in our reference frame)? Current answer comes from Einstein, rest mass and speed of light. Mass is totally understandable but the speed of light sounds a bit strange. From ToEbi hypothesis only reasonable definition for an particle's energy is

First Law of ToEbi

$$\vec{E} = m\vec{f}$$

where m is the rest mass and $\vec{f}$ is the spin frequency $(1/s)$ of a particle.

Based on First law of ToEbi we can make the relation between particle's energy and its kinetic energy

$$mf = \frac{1}{2}mv^2$$

so in our reference frame particle's velocity changes distribute to particle's rotation frequency.

ToEbi energy relation

$$\Delta f = \frac{1}{2}\Delta v^2$$

Derived relation is actually quite obvious. What other options a particle has in order to store or release kinetic energy? More on this mechanism in source of inertia chapter. Read also chapter: ToEbi vs. classical mechanics

Force

Physical mechanism behind force is created by FTEP collisions. Two spinning particles (they always spin) create a bigger ether density between themselves. Particles get better mechanical grip from denser, slowing down, FTE between themselves and mechanically move towards each other.

Particles interact with their masses and with their spin frequencies. We can state that force exerted by two spinning particles or spherical stellar objects (like stars, planets) is defined by

Second Law of ToEbi (for different masses)

$$\vec{F} = (G_1 + G_2)\frac{M_1 M_2}{r^2}$$

where r is a distance between mass points and

$$G_x = \frac{1}{2}f_x^2$$

where (f = spin frequency). Particles always tend to spin their spin axes parallel to the surface of thickest FTE volume. Therefore we can define spin frequency altering force (SFAF)

$$\vec{F}_{SFAF} = (G_1 + G_2)\frac{M_1 M_2}{r^2}\sin\alpha\vec{e}_3$$

where α is angle between spin axis of particle x and the plane perpendicular to the line connecting mass points of particles. $\vec{e}_3$ is unit vector perpendicular to the plane containing $\vec{F}$ and $\vec{n}_x$ in the direction given by the right-hand rule. SFAF has a very important implications for example in energy conservation and in stellar orbiting.

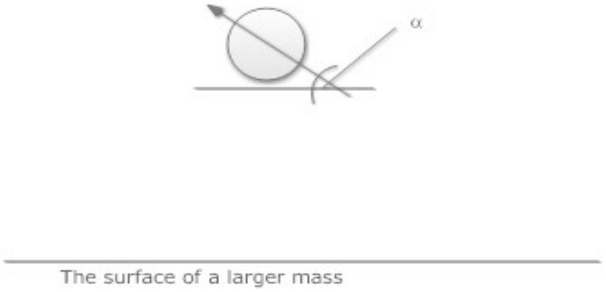

Figure 1: Particle interacting with larger mass

When particles have roughly an equal mass they are capable of experiencing each other's generated waves. Excellent example of wave interaction is magnetism or interaction between galaxies. Therefore we can define

Second Law of ToEbi (for roughly equal masses)

$$\vec{F} = (G_1 + G_2)\frac{M_1 M_2}{r^2}\cos\alpha + (G_1 + G_2)\frac{M_1 M_2}{r^2}\sin\alpha\vec{e}_3$$

applies. Where α is angle between spin axes. Negative value from $\cos\alpha$ means pushing force.

Gravitation

Rotation induced force is easily observed with Modified Cavendish Experiment (`http://www.sea3000.net/zhuyonghuan/20081009181348.php`). Ball is put near another ball, then by rotating the ball there will be an additional measurable gravitational effect. Experiment on larger mass, like on Earth, effects greatly experiment's results. But still the effect is measurable. The Third Law of ToEbi will handle the dampening effect caused by Earth.

Gravitational constant G is an empirical physical constant which is believed to be universal. In reality, G is unique to each stellar object and its calculated value is (based on Second Law of ToEbi)

$$G = \frac{1}{2}f^2$$

where f is the spinning frequency of stellar object. Measured gravitational constant is a little less than calculated G on Earth. Difference is propably due to slower spin frequency of Earth's core.

There won't be an additional gravitational acceleration if we rotate rocks, tires, drills, ourselves, etc on Earth. Objects located on Earth have their particles aligned with Earth's idealised surface. Object's spinning won't increase the total amount of interacting FTEPs with Earth. Some particles in a rotating object experience increased amount of FTEPs while some particles (at the same time) experience reduced amount of FTEPs. Triangle structure of the most common hadron particles (proton, neutron) is presented in their propriate sections.

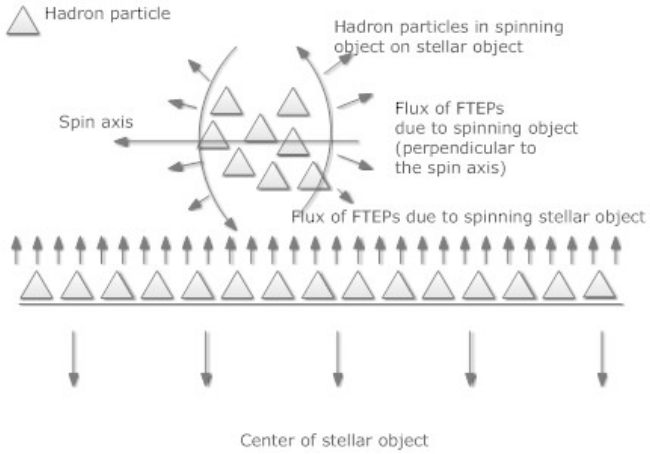

Figure 2: Object rotating horizontally

However, another object on a side of the rotating object experiences increased amount of FTEPs.

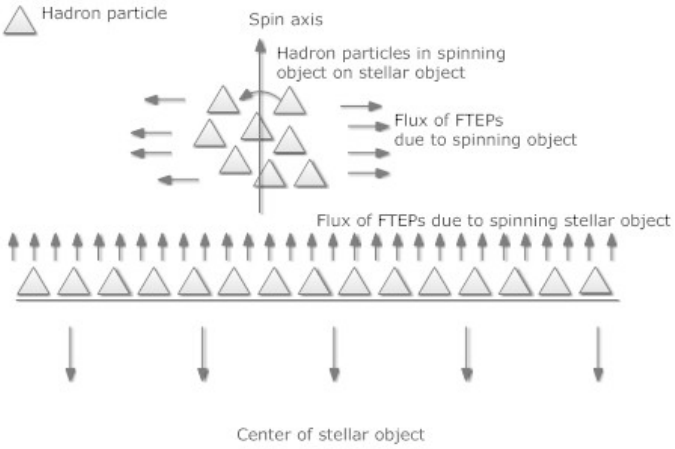

Figure 3: Object rotating vertically

Incoming comet, asteroid, spacecraft etc. have a considerable mass hence there is always preferenced direction for object's particles to align with. Therefore we can handle those objects according to Second Law of ToEbi. However, because of their possible physical shapes there is certain limitations!

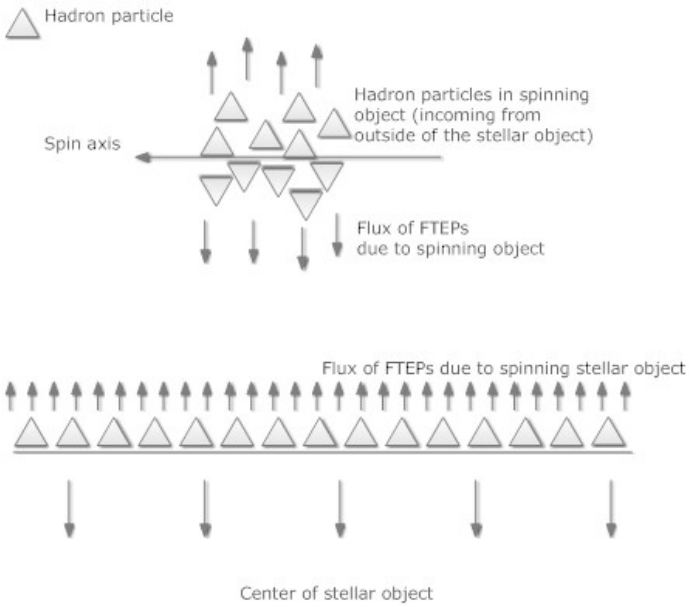

Figure 4: Incoming rotating object

Rough estimation in case of man-made spacecraft would be
This sub law needs more detailed describtion
Second Law of ToEbi (for cylinder shaped mass)

$$\vec{F} = (G_1 + G_2 \cos\alpha)\frac{M_1 M_2}{r^2}$$

where number 2 stands for the cylinder shaped spacecraft and α is the angle between spacecraft's spin axis and the plane perpendicular to line connecting mass points. Equation applies for example to Pioneer anomalies.

Strong interaction

Strong interaction and strong residual force can be also calculated with the laws of ToEbi. Atom Model and Relativity paper (the latest version is available from `http://www.toebi.com` site) will cover these aspects in more detailed fashion. Few relevant issues are presented here.

Based on First Law of ToEbi, proton's (and electron's) spinning frequency is roughly $8.98755 * 10^{16}$ 1/s at rest on Earth. High spin frequency quarantees very powerful interactions between particles. At the same time there will emerge a repulsion between particles. Repulsion prevents particles to collide and it emerges from colliding FTEPs between particles. At ground state the force of repulsion is equal to the pulling force.

Electromagnetism

Naturally electromagnetic interaction can be also calculated with ToEbi laws. Previously classical atom models thought that electrons orbit around the nucleus, just like planets orbit around Sun. It's very understandable idea after

all. In reality, electrons can orbit around the nucleus but they don't have to. For example, electrons involved within bonds are pretty static. Those electrons function as a buffer between nucleus. High FTE density around a nucleus prevents electrons (in normal conditions) to collide with nucleus.

Changes between different electron orbits (towards nucleus) in an atom causes photon emission. Creation of photon is a physical process. When electron returns to its ground state, it will cause a shock wave of FTEPs toward nucleus. FTEPs get compressed together and a new photon particle is created. We can conclude that photon is a sphere like particle because other particles involved are also sphere like.

Light's wavelength is actually a presentation of photon's rotation frequency $\lambda = \frac{c}{f}$. Frequency depends on how near created photon can get to a nucleus during the compression process and that depends on electrons released potential energy.

Magnetism

Spinning electron creates FTEP waves around it. In case when material crystal is magnetized, its free valence electrons are moving and spinning in an aligned manner.

The reason why for example iron, cobalt and nickel are ferromagnetic is the shape of their nucleus combined with free valence electrons. In all those cases nucleus is a box like and there is valence electrons which are not used in crystal structure. Excellent example is chromium which has a box like nucleus and one valence electron. However chromium is normally antiferromagnetic! The reason is that every chromium electron is a building block in chromium crystal and therefore you can't re-arrange valence electrons orbiting direction in order to create a magnet from chromium.

With smoother shaped nucleus, electrons can move more freely around nucleus. Box like shape keeps electrons movement more easily in an aligned manner. Magnetization orders these ferromagnetic atoms free electrons to flow and spin into an uniform direction.

Electron flow and spinning direction rules the magnetic pole. On another pole of magnet, electrons flow away from the center of magnet and on another pole toward the center of magnet. Based on Second Law of ToEbi same spin directions causes pulling force and different spin directions pushing force.

Direct consequence from this explanation for magnetism is that there can't be so called magnetic monopoles.

FTE

Denser FTE means bigger repulsion between objects. Even our own planet experiences this for example in case of Sun's effects on radioactive decay rate on Earth. While orbiting Sun, Earth experiences different densities of FTE around Sun (distance varies). In case when Earth is at nearest to Sun, combined FTE between Earth and Sun is most dense. This puts atom nucleus under increased destructive force induced by electrons. Increased destructive force happens because denser FTE keeps weak spots of nucleus in longer

distance than normally. Orbiting electrons get lever from this new nuclei distances which increases odds for a radioactive decay.

Solar flares create FTE shock waves hence denser FTE on Earth. Incoming FTE shock wave can be measured with radioactive decay rates (with certain atoms) and protective measures can be made against following electromagnetic radiation.

Radioactive decay rate can be increased artificially by rotating radioactive material [1]. Reason for the phenomenon is increased FTE density because rotation. Weak spots inside a nucleus increase their distances which gives electrons more destructive lever.

Force calculations

Rotating object generates increased FTEP flux around it. When rotating object is located on greatly larger mass compared to object itself, most of the generated flux get dampened. In case we want calculate force generated by rotation between two objects on Earth we have to calculate Earth's FTE damping effect.

Force between rotating object A and (rotating) object B on the same level on large rotating mass C can be calculated by using Second Law of ToEbi together with the dampening factor of

Third Law of ToEbi

$$T_{A,C} = \frac{s^{-2}kg}{m} \frac{x_{A,C}^2}{f_C^2 M_C r_{A,B}}$$

where $x_{A,C}$ is object's A mass point distance from the surface of object C in meters and f_C is spin frequency and M_C is mass of object C. Variable $r_{A,B}$ is distance between objects A and B surfaces.

Modified Cavendish experiment is one easy way to verify ToEbi force equations.

Planck constant

Modern physics states Planck constant h and its relation on photon's energy and frequency

$$E = hf$$

where f is the frequency of photon. Direct consequence from The First Law of ToEbi is that Planck constant, without its units, presents in reality photon mass. Photon's energy is increased when photon enters denser FTE. In that case the photon encounters more FTEPs in its path which induces higher spin frequency for it. Phenomenon is known as (gravitational) blue shifting. Opposite case is when the photon exits denser FTE. Encounters with FTEPs decrease which decreases photon's frequency. Phenomenon is known as (gravitational) red shifting.

Photon momentum

Based on First Law of ToEbi (photon mass = Planck constant's value in kilograms)

$$E = hf = \frac{hc}{\lambda}$$

therefore

$$\frac{h}{\lambda} = \frac{E}{c}$$

On the other hand

$$p = hc = \frac{hcc}{c} = \frac{hf\lambda c}{c} = \frac{E}{c}\lambda c = \frac{E}{c}\frac{c^2}{f}$$

so following relation applies

$$\frac{f}{c^2}p = \frac{h}{\lambda}$$

Compton scattering

Due to conservation of momentum

$$\vec{p_e} = \vec{p_2} - \vec{p_1} = h\vec{c_2} - h\vec{c_1}$$

hence

$$m_e^2\vec{v}^2 = 2h^2c^2 - 2h^2\vec{c_2}\vec{c_1}.$$

Therefore we get kinetic energy of electron

$$\frac{hc}{\lambda_1} - \frac{hc}{\lambda_2} = \frac{1}{2}m_e v^2 = \frac{h^2c^2}{m_e}(1 - \cos\alpha)$$

therefore

$$\frac{\lambda_2 - \lambda_1}{\lambda_1\lambda_2} = \frac{hc}{m_e}(1 - \cos\alpha).$$

Obviously following applies

$$\lambda_1\lambda_2 = \frac{h^2}{p_1p_2} = \frac{1}{c^2}$$

so we get the equation for Compton scattering

$$\lambda_2 - \lambda_1 = \frac{h}{m_e c}(1 - \cos\alpha).$$

Speed of light

Why the speed of light is constant (in vacuum)? The reason is actually quite obvious. During creation, a new particle (photon) has initially the cross section of electron. It will experience strong repulsive force from nucleus and from the electron next to it.

Generated acceleration is massive and very quickly photon achieves velocity where its interactions between incoming FTEPs causes it to compress

itself (reducing the cross section) and gain more spin frequency (Energy conservation). When cross sections of the electron and the photon don't match anymore the acceleration stops and at that point the velocity just happens to be c.

Photon kind of spins through the space. If a photon enters thicker FTE (like in an atom) then it has more FTEPs to get by hence its speed decreases. After thicker FTE the photon continues with the original speed.

What is mass?

There is a two types of masses in physics, inertial and gravitational mass. Those two are experimentally verified to be the same (within measurements accuracy limits). But what is mass itself? What is the mechanism behind it? Only reasonable way to define mass emerges from particle's properties and only property which isn't involved yet in ToEbi is particle's size.

Some particles are made of multiple smaller particles, like hadrons do. How should we define the size of different particles? Every spinning particle defines repulsive wall around it. Inside that wall another particle comes a part of a new particle. Nuclear fusion is a good example or electron capture in case of neutron creation.

We should define that **particle mass is its (repulsive wall's) cross section**. Cross section is an area (m^2), so based on ToEbi metric

$$\frac{kg}{m*s} = \frac{m^2}{m*s} = \frac{m}{s} = c$$

Proton

Based on the mechanism of a mass it's likely that proton is just constructed from three electrons. Prediction is also supported by the fact that proton's and electron's energy can be calculated with the same spin frequency.

Repulsive wall in picture is simplified. In reality, the wall is more pear like.

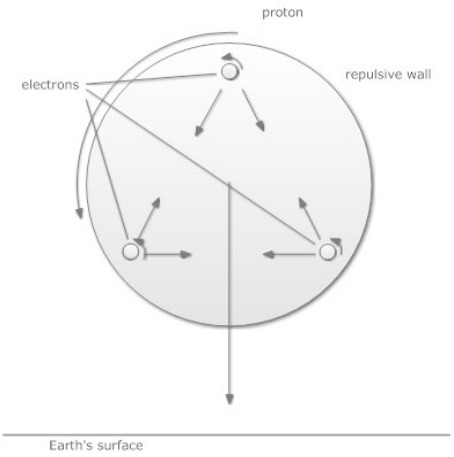

Figure 5: Proton

Configurations based on two or four electrons are not stabile. In case of two electrons very small disturbance causes electrons flyby each other. In case of four electrons the problem arises from very easy rolling out effect of upper electrons in construction. Up from four electrons, potentially stabile construction are just too big and fragile in order to survive (at least on Earth).

Mass of proton is over 1800 times the mass of electron. Based on previous, we can say that proton's repulsive wall (cross section) is over 1800 times the electron's repulsive wall (cross section). However, measuring the size of proton based on scattering electrons gives obviously a different size (cushion effect).

Neutron and neutrino

Neutron is also made of three electrons. The unique feature which differentiates a neutron from a proton is neutron's smaller spin frequency. In case of electron capture the electron penetrates the repulsive wall of the spinning proton (most likely through the spin axis pole) and decreases both proton's and electron's spin frequency. We can conclude that ejected electron neutrino is actually the penetrating electron itself!

Another way (not as common as electron capture) to produce a neutron is through β^+ decay which might actually be triggered by an incoming neutrino (work hypothesis). Neutrino comes very close (reduced spin frequency of neutrino allows that) to one of the three electrons and pushes it towards another electron resulting a electron (interpreted as positron) and decreased spin frequency for the proton (energy conservation!) is now interpreted as a neutron. Based on used work hypothesis it's totally understandable that the neutrino flux from Sun effects in some cases the rate of β decay on Earth.

Decreased spin frequency of neutron enables proton-neutron bond because there won't be too powerful initial interaction between proton and neutron. In case where a proton approaches another proton they generate very strong pulling (or pushing) force (both rotating fast). Generated pulling force causes these protons just repulsive bounce and/or flyby each other.

Neutrino oscillation is similar to red or blue shifting of light. When neutrino enters more dense FTE it will experience more interactions with FTEPs and rotate faster. Bigger rotation frequency generates bigger energy for the neutrino. When neutrino enters less dense FTE it will experience less interactions with FTEPs and rotate slower. Smaller rotation frequency decreases the energy of neutrino.

Why free neutron decays so fast but a neutron in a nucleus doesn't? One obvious reason is the lack of shielding in two ways. There won't be a neigbouring electrons and protons providing shielding. Secondly, reduced spin frequency means also reduced FTE density around the neutron. Also the absence of other nuclei provided FTEPs (this also explains why neutrons are "bloated" in a nucleus when compared to a free neutrons) weakens the shielding.

Free neutrons can interact freely with surrounding electrons and protons. These interactions eventually trigger the neutron decay process.

Spin

Quote from Wikipedia:

> Spin is an intrinsic form of angular momentum carried by elementary particles, composite particles (hadrons), and atomic nuclei. Spin is a solely quantum-mechanical phenomenon; it does not have a counterpart in classical mechanics (despite the term spin being reminiscent of classical phenomena such as a planet spinning on its axis).

Actually it does have a counterpart in classical mechanics. Spin is indeed particle spinning around its axis! That is the core of ToEbi. With that interpretation theory of everything is possible.

Nuclear spin

Nuclear spin is generally determined by calculating protons and neutrons. If both sums pair up it is said that nuclear spin is zero. If only one of them pairs up it is said that spin is half and if both sums are uneven it said that spin is one. There is natural explanation for the nuclear spin and it's very much classical. It also explains the calculus of nuclear spin. In trivial case of hydrogen spin is labeled as half, in case of deuterium it is one and in case of tritium it is half.

Protons and neutrons have different spin frequency which explains why spin calculation works separately for protons and neutrons, in other words only proton can eliminate other proton's wave generation into FTE totally. In tritium there is two neutrons in nucleus and they eliminates each others waves.

With second neutron created hydrogen isotope decays very quickly but based on measurements neutrons around proton are evenly distributed. In that setup neutrons won't eliminate each others waves due to distance, that's why spin is 2.

Elimination of waves means that when two same kind of particles with same spin direction are at very close proximity then generated repulsion causes turbulence into FTE around those particles. Turbulence prevents particle's ability to interact with external waves in FTE (like waves from magnet). Turbulence generated around proton and neutron also effects interaction ability but not as totally as in case proton-proton.

Other often observed atom isotope in MRI is oxygen-17 (8 protons, 9 neutrons) and its spin is 5/2. Why 5/2? There is three alpha-particles which have combined spin zero. Two proton-neutron pairs (total spin 2) and one standalone neutron (spin half). So total nuclear spin is $2\frac{1}{2} = \frac{5}{2}$.

Electron spin

Electrons are no exception. When two electrons are close enough in dense enough FTE they can spin together and generate turbulence around them. Usually this happens when electrons are inside an atom. Dense FTE provides big enough dampening effect which prevents too strong interaction between electrons.

The origin of electron spin numbers is in Stern-Gerlach experiment. The real reason why silver atoms create the observed pattern is valence electron's spin orientation in magnetic field. Magnetic field causes free valence electron to choose its spin orientation. Emerged spin orientations attracts the electron towards S or N magnetic pole as described by Second Law of ToEbi.

Synchrotron radiation

Electromagnetic radiation emitted from synchrotron is very misleading phenomenon. It might be the biggest reason why modern particle physics considers classical interpretation of atom structure impossible. Ultra-relativistic (charged) particle emits photons therefore orbiting classical billiard ball electrons must lose their energy and crash into the nucleus.

In reality situation is very much different in an atomic scale and in a synchrotron. Electrons in an atom are not necessarily orbiting at all, just like in the case of crystals. Electrons participating in bonds are pretty stationary. Naturally inside a standalone atom electrons are free to orbit but their orbiting speeds and directions depend on multiple factors, like thermal energy, nearby electrons, incoming particles etc.

The reason for electromagnetic radiation from a synchrotron is the photon creation (compressed FTEPs) due to acceleration of an electron or a proton. Phenomenon happens also when an electron accelerates inside an atom but with much smaller velocities.

Source of inertia

Spinning particles approach their balanced spin orientation all the time. For example, inside an iron block, all iron atom nucleus are aligned in relation to Earth's imaginary surface (smooth spherical surface). Electrons have their balanced postitions inside a crystal and so on. Same balanced spin orientation seeking happens everywhere all the time.

What causes inertia? In a situation where an object is at rest its particles are in somewhat balanced alignment towards Earth's surface. If we have two objects, A and B, and object A hits object B. It means that object A has some stored energy in its particles (ToEbi energy relation) in form of additional spin frequency. During the impact energy will be changed from A to B (elastic collision).

Emerged inertia is actually a work against pulling force between Earth and object B. Object A has its energy stored in higher spin frequency of its particles. During the impact stored energy causes particles of object B (with smaller spin frequency) to lose their alignment in relation to Earth's surface. Bigger the energy bigger the none-alignment. Because close distances between object's atoms exerted force is experienced by every particle.

In the next phase pushing repulsive force between object A and B overcomes experienced force between objects and particles of object B start to precess. Precession is caused by interaction between object B and Earth (Second Law of ToEbi). Result of precession is a bigger spin frequency of object B's particles. Momentum and energy are conserved.

Very similar idea on energy conservation and inertia is presented by physicist Vesselin Petkov (`http://spacetimecentre.org/vpetkov/Inertia-Petkov.pdf`).

Superconductivity

In order to understand superconductivity we must understand what happens when energy is very low in an atom or in a system of atoms. Removing energy from a particle equals reducing its spin frequency. There is immediately two obvious consequences.

- Particle (or system of particles) interacts less with Earth's FTE. In other words it experiences less gravitational interaction.
- Moving electrons (in material capable of superconductivity) experience less pulling force towards a nucleus due to slow spin frequency of involved particles. Also contacts between current electrons are less violent hence there won't be acceleration generated between contacting electrons (equals no energy lost through radiation). Actually those current electrons are capable of making pairs (Cooper pair) which is impossible in higher temperatures.

Meissner Effect is easily explained with ToEbi. After critical point in terms of atom energy reduction (reduced spin frequency) magnetic flux (flow of FTEPs) starts to control spin orientation and spin frequency of electrons on surface (and below surface) of object. Magnetic flux induces electrons to spin opposite direction compared to magnetic flux. Phenomenon is exactly the same as in case of photon creation in atom. Based on Second Law of ToEbi magnetic source and outer electrons of the object starts to experience pushing force.

Helium II phase

One of the most exciting phenomenon in low energy experiments is helium II phase. First of all, helium is the only atom which won't experience solid state in normal pressure no matter how low the temperature is. The reason for this is atom structure of helium-3,4.

There is three or four nuclei orbited by one pair of electrons. Because those paired electrons helium composes an inert gas. Helium nucleus is however quite exposed compared to other atoms nucleus. Atoms containing more than one protective electron or electron pair can protect their nucleus much more efficiently. When two atoms are put together there is always generated denser FTE between them which attracts orbiting electrons. Because that nucleus exposure helium gas won't experience solid state. Spinning nucleus can always interact with another nucleus due to lack of protection provided by electron. With high pressure (25 bar) it is possible to bring helium atoms so close to each other that helium appears to be in solid state.

The difference between helium-4 and helium-3 is one neutron. Because a single neutron in helium-3 its nucleus is more interactive at nucleus level in

comparison to helium-4 nucleus. This explains why it takes even lower energy to achieve helium II phase with helium-3.

Creeping effect

So what causes the creeping effect? Obviously gravitational interaction causes liquid level equalizing. But why that liquid does the creeping? Even thou container has a low energy also it certainly has more mass in a contact area when compared to that helium inside it. Container mass provides denser local FTE for helium to interact with. Because of low energy, the container and helium can get very close to each other, therefore helium nucleus near the container wall changes its spin orientation towards it! Creeping effect enabled.

ToEbi vs. classical mechanics

What is the relationship between ToEbi and classical mechanics? Can we derive classical mechanics laws from ToEbi?

Force

The most profound law of classical mechanics might be

$$F = ma$$

so the units of force are

$$N = \frac{kg * m}{s^2}$$

and gravitational acceleration is

$$g = G\frac{M_{Earth}}{r^2}$$

hence

$$\frac{m}{s^2} = G\frac{kg}{m^2}$$

In this situation, the fathers of classical mechanics made the mistake. In order to overcome the mismatch both in units and magnitude they decided that G should be defined as (with modern measurement accuracy)

$$G = 6.67384(80) * 10^{-11}\frac{m^3}{kg * s^2}$$

That must be the biggest blunder in physics! But as we now know (based on ToEbi), G is **not** a constant and its units are utterly wrong. Proper way to go would be

$$g = \frac{1}{2}f_{Earth}^2\frac{M_{Earth}}{r^2}$$

hence the units of acceleration under the influence of gravitating object should be

$$\frac{kg}{m^2 * s^2}$$

After all, inertia emerges from gravitational interaction. Derived from previous, the units of velocity under the influence of gravitating object should be

$$\frac{kg}{m^2 * s}$$

At least we should remember that units in classical mechanics are different due to historical reasons.

Energy

Based on ToEbi energy relation

$$E = mf = \frac{1}{2}mv^2$$

and the same with units

$$\frac{kg}{s} = \frac{kg * m^2}{s^2} = kg * m * \frac{m}{s^2}$$

Because the concept of kinetic energy is based on classical mechanics it holds the error with units as described above. Therefore

$$\frac{1}{s} = m * \frac{m}{s^2} = m * \frac{kg}{m^2 * s^2} = \frac{kg}{m * s^2} = \frac{kg}{m * s} * \frac{1}{s}$$

hence due to ToEbi metric

$$\frac{1}{s} = \frac{kg}{m * s} * \frac{1}{s} = \frac{1}{s}$$

So the units in ToEbi energy relation match.

Force

Based on ToEbi metric we can put any kind of unit, or no units at all, for force without any magnitude conversion factor. Based on Second Law of ToEbi, units in force are

$$\frac{kg^2}{m^2 * s^2} = (\frac{kg}{m * s})^2 = 1$$

Examples

Section contains few calculation examples based on ToEbi equations. Amount of examples can be infinite therefore only few thought provoking examples are included.

Obvious conclusions based on ToEbi are that there is no need for dark matter or dark energy. Slow rotation frequency of a galaxy explains quite naturally observed galaxy arms behaviour. Rotation orientation of galaxies explains observed accelerating expansion of universe. Roughly same sized galaxies obey also Second Law of ToEbi. Both of these phenomena deserves a paper of their own.

Understanding and ability to harness antimatter might be the most important outcomes from ToEbi at least to author. Naturally there is a whole paper dedicated to it. Actually antimatter and its applications deserve a book series!

Parallel wires

Two parallel copper wires, diameter $2.05 \cdot 10^{-3}$ m, length 1 m each. Copper crystal size $a = 3.615 \cdot 10^{-10}$ m. Each copper wire surface contains roughly $2.466 \cdot 10^{16}$ copper crystals, so roughly $6.2 \cdot 10^{16}$ outer electrons. Valence electrons per wire weight roughly $5.6 \cdot 10^{-14}$ kg.

Electrons in a wire carring current have their spin orientation parallel to wire. Even without current, free electrons have their spin orientation aligned with the wire's surface, although arbitrarily on the plane. Fed current (additional electrons) orders electrons to find a spin orientation (on given plane) with the lowest energy configuration which means an uniform spin orientation (spin axis poles head-on) on given plane. Current feeder's end also determinates the spin direction for those electrons (why?). Therefore we can handle those wire's surface valence electrons as an unitary mass with a spin frequency.

Let's calculate the force which can be exerted by existing valence electrons between wires at distance of 1 m in an imaginary case where electrons are aligned without externally fed current.

$$F = T_{wire,Earth}(G_1 + G_2)5.6 \cdot 10^{-14^2} \approx 1.95 \cdot 10^{-42} n_{valence}^2$$

where $n_{valence}$ is the spin frequency of copper's outer electrons ($8.98755 \cdot 10^{16} 1/\mathrm{s}$).

Wires generate approximately force of $3.16 \cdot 10^{-8}$N. Calculated force is generated with existing surface valence electons. 1 Ampere definition generates force of $2.0 \cdot 10^{-7}$N. We can conclude that in order to fullfill the 1 Ampere definition an additional electrons are needed.

In case we feed the same current but from the opposite ends of wires then based on Second Law of ToEbi generated force is pushing those wires apart.

Mass of Sun

Earth orbits Sun roughly 30 km/s so the force holding Earth in its orbit is

$$F = \frac{mv^2}{r} \approx 3.6 \cdot 10^{22} N.$$

Total pulling force generated by Earth and Sun is based on Second Law of ToEbi (excluding SFAF)

$$3.6 \cdot 10^{22} N = \frac{(G_{Sun} + G_{Earth}) M_{Sun} M_{Earth}}{r^2}$$

Resolving M_{Sun} from the equation gives $\approx 2.0000 \cdot 10^{30}$ Kg. Current calculated value is $1.9891 \cdot 10^{30}$ kg.

Sun bends starlight

Initial facts.

- Mass of photon (Planck constant): $6.62606957 \cdot 10^{-34}$ Kg
- Selected wavelength of light: $\lambda = 430$ nm, hence $n_{photon} = \frac{c}{\lambda} \approx 6.972 \cdot 10^{14}$ 1/s

Based on Second Law of ToEbi, force deflecting photon at its maximum value is

$$F = (G_{Sun} + G_{photon})\frac{M_{Sun}M_{photon}}{r^2} \approx 6.7 \cdot 10^8 N$$

Obviously calculated value doesn't match the observations. There must be some other type of interaction mechanism between a photon and a stellar object. Let's hypothesize that interaction happens only between an electron and a photon when they are almost colliding (photon electron flyby). The minimum distance between an electron and a photon is $\approx 5.3848 * 10^{-16} + 1.452289 * 10^{-17} + x \approx 5.53 * 10^{-16} + x$ m (Values are calculated based on particle's cross sections πr^2). Variable x means the mandatory gap between the interacting particles. The duration of flyby is $\approx 3 * 10^{-24}$ s. Hence the impulse is

$$F * s = (G_{electron} + G_{photon})\frac{M_{electron}M_{photon}}{r^2} * s \approx \frac{7.3 * 10^{-54}}{(5.53 * 10^{-16} + x)^2} J$$

Measured deflection angle is $\approx 8.5 * 10^{-6}$ rad. By using basic momemtum vector calculus we get

$$\frac{7.3 * 10^{-54}}{hc(5.53 * 10^{-16} + x)^2} = \frac{3.7 * 10^{-29}}{(5.53 * 10^{-16} + x)^2} = \tan\alpha$$

and the value for x as big as $\approx 2 * 10^{-12}$ m which sounds reasonable. Therefore chosen hypothesis sounds promising. Naturally the mass of Sun effects the distance between the electron and the photon during the flyby. Based on our example calculation, shorter distances between an electron and a photon would cause scattering.

References

[1] V.A. Panchelyuga, S.E. Shnoll

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