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, this paper presents The Theory of Everything. Presented theory is testable.

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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.

There is also a phenomenon named as particle entanglement. Entanglement is a direct consequence of physical shape of particles involved (like photons and FTEPs).

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 to-

tally 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

$$\vec{E} = J\frac{s}{kg}m\vec{n}$$

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

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

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

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

ToEbi energy relation

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

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 the source of inertia chapter.

Force

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

Because particles (and objects in general) interact with their masses (cross sections) through FTE and with their spinning rates we can state that force exerted by spinning particles (objects) is defined by

Second Law of ToEbi (Force)

$$\vec{F} = (G_1 + G_2)\frac{M_1M_2}{r^2}\cos(\alpha) + (G_1 + G_2)\frac{M_1M_2}{r^2}\sin(\alpha)\vec{e}_3$$

where α is angle between possible spinning axes, r is a distance between mass points and

$$G_x = N(\frac{ms}{kg})^2\frac{1}{2}n_x^2$$

where (n = spinning frequency). Both particles experience the same defined force towards each other. In case of negative value the force is pushing particles apart (in ideal case). However, the sizes of interacting particles (or stellar objects) matter. If another particle (or object) is much more massive than the other then interaction in general is pulling type. There won't be needed directional preference to interact on (wavelength difference is too large?), so also the angle α will be meaningless regarding the spin axis orientation on the horizontal plane. However, the angle in a vertical sense is still relevant.

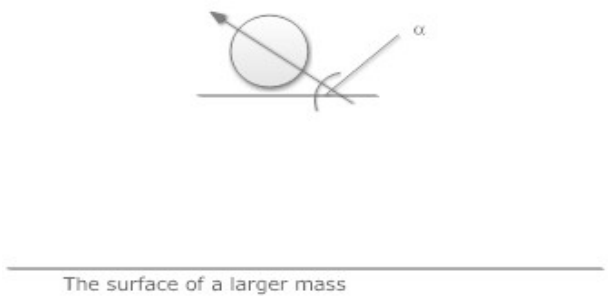

Figure 1: Particle interacting with a larger mass

$\vec{e}_3$ is unit vector perpendicular to the plane containing $\vec{n}_1$ and $\vec{n}_2$ (rotation vectors of particles) in the direction given by the right-hand rule. The acceleration into direction of unit vector $\vec{e}_3$ can be considered rotation frequency altering acceleration of object (**RFAA**). RFAA has a very important implications for example in energy conservation and in stellar orbiting.

We can also generalize that Second Law of ToEbi into a stellar scale. If we imagine that a single spinning particle is actually a single spinning stellar object. However, it's important to remember that stellar objects are constructed from (pretty much at the same rate) spinning particles which experience the surrounding FTE conditions (like density). Based on that generalization, stellar object can exert a spin induced force experienced by another object.

Gravitation

Rotation induced force is easily observed with Modified Cavendish Experiment [1]. Larger ball is put near smaller ball, then by rotating larger 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 suppressing 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)

$$G = N(\frac{ms}{kg})^2 \frac{1}{2} n^2$$

where n is spinning frequency of the stellar object.

Measured gravitational constant is a little less than calculated G on Earth. Difference is due to other masses outside Earth (like Moon, Sun and our galaxy center). Also possible slower rotation frequency of Earth's core is a factor. With high precision measurements there is detected small differences in gravitation constant depending on measurement location.

So called flyby anomaly is easily explained if we take the spinning frequency of a spacecraft $n_{spacecraft}$ into a consideration. Additional acceleration generated by the rotation of a spacecraft (spin plane towards Earth) is $n^2_{spacecraft}$ in FTE environment created by spinning Earth (based on Second Law of ToEbi).

It is important to understand the mechanism which causes an additional gravitational acceleration in a case of flyby anomaly. There won't be an additional gravitational acceleration if that spacecraft's rotation happens on Earth! Same applies if we rotate rocks, tires, drills, ourselves, etc on Earth. Objects located on Earth have their particles aligned with Earth's idealized surface. Object's rotation 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.

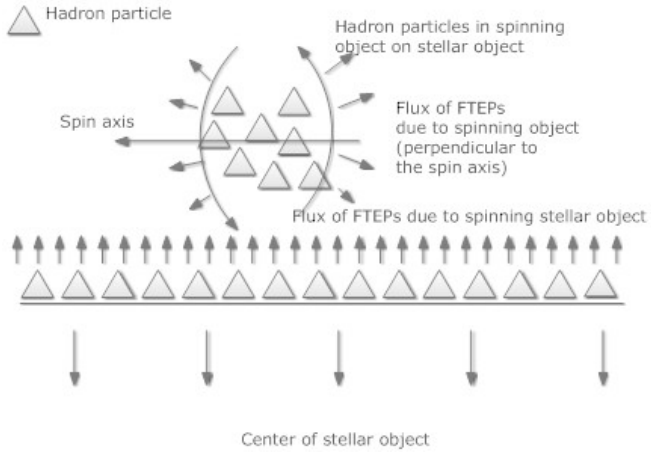

Figure 2: Object rotating horizontally

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

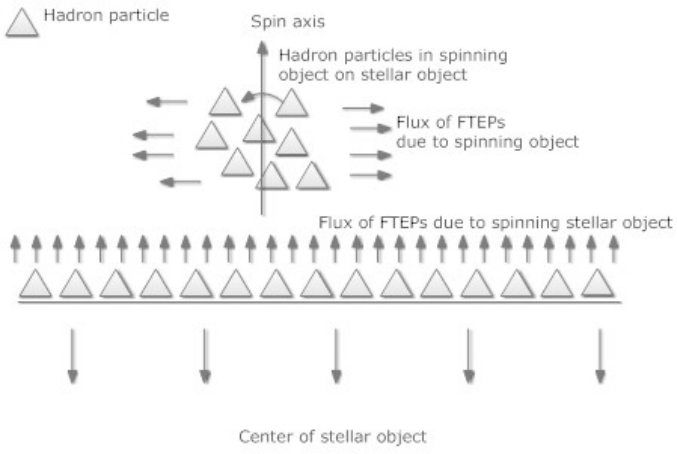

Figure 3: Object rotating vertically

Incoming comet, asteroid, spacecraft etc has its own particle spin orientation structure which is not aligned with Earth's idealized surface. Those objects have a mass hence there is always a preferenced direction (biggest

FTE density) to align with. Therefore we can handle those objects according to Second Law of ToEbi.

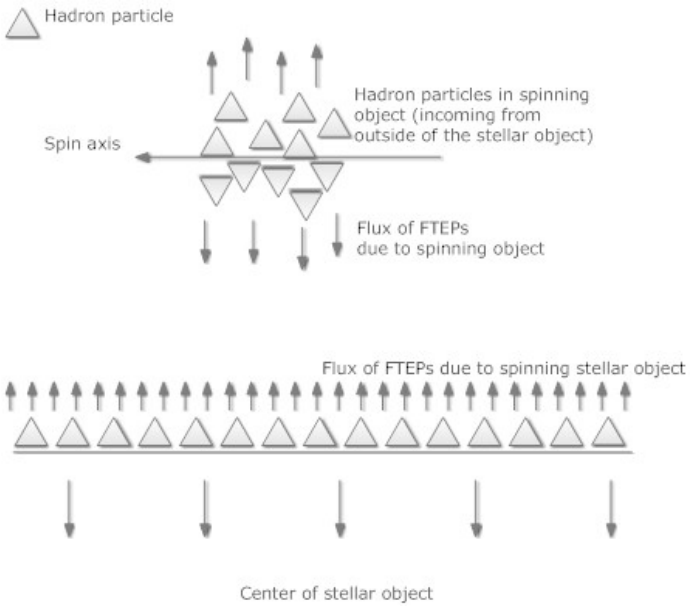

Figure 4: Incoming rotating object

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 [2]. 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

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

where $x_{A,C}$ is object's A mass point distance from the surface of object C in meters and n_C is rotation 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

$$E = hn$$

where n is the frequency of photon. Direct consequence from The First Law of ToEbi is that Planck constant presents in reality the mass of photon. Photon's energy is increased when photon enters denser FTE. In that case the photon encounters more FTEPs in its path which induces higher rotation 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.

De Broglie relation

The First Law of ToEbi can be stated with mass of photon (= Planck constant)

$$E = hn = \frac{hc}{\lambda} \tag{1}$$

hence

$$\frac{E}{c} = \frac{h}{\lambda} \tag{2}$$

and momentum

$$p = mv = hc. \tag{3}$$

Based on equations (1) and (3)

$$E\lambda = p \tag{4}$$

hence

$$\frac{p}{n} = \frac{E}{c}. \tag{5}$$

By selecting $n = 1$ and combining equations (2) and (5) we have the de Broglie relation

$$\lambda = \frac{h}{p}. \tag{6}$$

Compton scattering

Based on derivations so far we are ready to derive Compton scattering equation. Because momentum conservation we get

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

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

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

therefore

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

From de Broglie relation we get

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

and in case of photon (which mass is h) we get

$$\lambda_1\lambda_2 = \frac{h^2}{h^2c^2} = \frac{1}{c^2}. \tag{7}$$

By using equation (7) 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)? Gravitation effects only on wavelength of light (and bends its path). The reason is actually quite obvious. During its creation, new particle (photon) experiences strong spin frequency of nucleus. Nucleus induced FTE movement (repulsion) gives the photon different spin direction.

Based on Second Law of ToEbi opposite spin direction causes pushing force between the proton and the photon. Generated acceleration is massive and very quickly photon achieves velocity where its interactions between incoming FTEPs causes it to lose mass and gain more spin frequency (Energy conservation). At that point the proton and the photon doesn't generate pushing force anymore and photon has reached its maximum velocity.

Photon kind of spins through the space. If 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.

Repulsive wall is a good platform for the definition of particle's mass. Therefore we can define

Mass of a particle is its repulsive wall's cross section.

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.

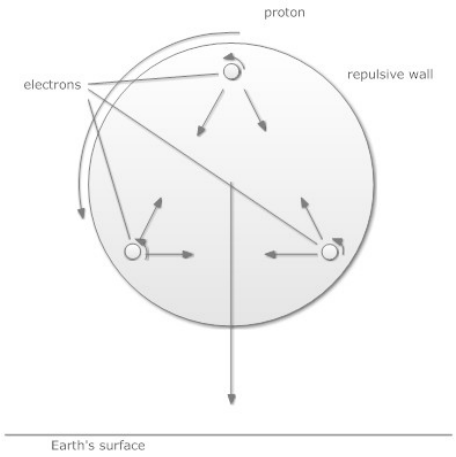

Figure 5: Proton

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 spinning 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. These factors allow incoming neutrinos to hit more easily the inner electrons of free neutron.

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 rotation frequency of its particles. During the impact stored energy causes particles of object B (with smaller spinning 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 [3].

Relativity

Science in general needs the consept of time. Spinning frequency needs the consept of time ($\frac{1}{s}$). And as we know, speed of time varies. What causes the phenomenon?

In case of gravitational relativity the cause is denser FTE caused by large amounts of matter itself. In case of speed based relativity the cause is increased spinning frequency of particles and increased amount of incoming FTEPs.

Common nominator (even thou the birth mechanism is different) in cases of gravitational based relativity and speed based relativity is the experienced (subatomic) density of FTE. Increased FTE density between (subatomic) particles have its consequences.

Mass increase

Increased FTE density causes increased distances between particles. Increased distances in case of hadrons mean larger cross section which equals a larger mass. Same applies to leptons during interaction with other particles.

In case of other composite particles (like common atoms), larger cross section (increased subatomic particle mass point distances) increases decay propabilities. Orbiting electrons, hitting cosmic rays etc generate bigger torque when particle distances are bigger which increases the decay propabilities.

Length contraction

Direct consequence from mass increase is proving length contraction wrong. Quite opposite phenomenon is more likely. Current indirect evidence pro length contraction is easily explained by ToEbi and those explanations have

nothing to with a length contraction. Real length contraction happens when subatomic FTE density decreases.

Time dilation

Changed subatomic distances cause also time measurement changes. In case of increased FTE density it takes more time for an electron to change its orbit due to increased FTE density. Atomic clocks are based on these orbit changes. Therefore passenger on high speed imaginary space craft ages much slower than his/her family on Earth.

For ToEbi based equations for time dilation read Atom Model and Relativity paper.

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.

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/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 RFAA)

$$3.6 \cdot 10^{22} N = \frac{(G_{Sun} + G_{Earth}) M_{Sun} M_{Earth}}{r^2} \cos(7.155) N$$

Resolving M_{Sun} from the equation gives $\approx 2.018 \cdot 10^{30}$ Kg. Current calculated value is $1.9891 \cdot 10^{30}$ kg.

Rotation frequency of Venus

Planet Venus orbits Sun and its spin direction is different than any other planet's in our Solar system. Originally Venus had the same spin direction, but a collision with an other object made it flip upside down.

There are measurable effects due to the different spin direction of Venus. Based on Second Law of ToEbi, RFAA is slowing down Venus with the force of

$$F_{RFAA} = N(\frac{ms}{kg})^2 (G_1 + G_2) \frac{M_1 M_2}{r^2} \sin(\alpha) \vec{e}_3 \approx 3.383 \cdot 10^{18} N$$

where $\alpha \approx 2.19$ degrees and $G_{Sun} \approx 1.040 \cdot 10^{-13}$ and $G_{Venus} \approx 1.134 \cdot 10^{-15}$. There will be both orbiting velocity and spin frequence decrease.

Impulse reducing the orbiting velocity of Venus is $\approx 1.7 \cdot 10^{27}$J. It means that orbiting velocity of Venus has dropped ≈ 26.5 m/s during the 16 years. In comparison, the orbiting velocity of Venus is roughly 35 000 m/s!

Experienced torque slows down the spin frequency of Venus.

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.

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