Introduction to

Theory of Everything by illusion

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Chapter 1

Preface

Theory of everything in physics refers to the theoretical framework covering all physical interactions and elements in mathematically coherent and simple way. Because its very nature, theory of everything answers to the current big questions in physics and explains known anomalies. Where's all antimatter gone? Why the expansion rate of our universe is accelerating, because of dark energy? What is mass and inertia? What is dark matter made of and why detecting it is so difficult? And is it even possible to have the theory of everything?

So far, we have had three major players in physics, classical physics, quantum mechanics and Einstein's relativity theories. Our best effort so far, in order to create the theory of everything, has been string theory. But after the initial enthusiasm it has been a bit of disappointment for many theoretical physicists. String theory can't be falsified and being falsifiable is the key principle in physics. Some people in the field describe the situation as having a crisis in physics, we are kind of got stuck. In reality, the roots of our problems in physics are much more profound than we have previously thought.

Much more accurate adjective for the situation in physics would be **catastrophic**. Physicists have been building a skyscraper for centuries and unfortunately they have made some extremely poor choices along the design and construction phase. What options we do have? Keep on building on the top of our previous mistakes? Should we have a fresh start? Eventually, it's up to *you*.

Introduction to Theory of Everything by illusion is intended for physicists and for advanced physics enthusiasts. This book introduces a new theory which replaces quantum mechanics, standard model for particles and Einstein's relativity theories. Concepts like dark matter and dark energy will be explained and calculated. Presented theory creates also the foundation for future large scale antimatter utilization.

Main problem in contemporary theoretical physics field is its deviations and shortcomings from reality combined with unfalsifiable theories. We can see and experience surrounding things, solid objects, liquids, vapors, photons, electrons etc. Emitted and reflected photons create the picture into our brains through our senses. But when we study all those things more closely we kind of lose our track. We claim that there exist such things as vibrating strings, quantisized spin properties and four different force interactions.

All this historical package slows us down. Contemporary theoretical physics is living in an era which only slows down the progress of mankind. We are not stupid, we are just misled by our previous mistakes. When a paradigm gets born it has real staying power. Influential people and unfortunate misunderstandings have laid out the seeds of our scientific path in physics. Development of schooling system and development of our society in general has confirmed and supported our heading.

Going through contemporary physics education system doesn't help us to realize our previous mistakes. Young students don't have a chance, they study what lecturers teach to them and read books ordered them to read. And if they want a decent career in academics they must accept the current paradigm.

However, paradigms do change. Bit by bit, the amount of anomalous phenomena gets bigger and more problematic and pressure builds up for the change. Have we missed something along the way? Is something fundamentally wrong with our theories? Why can't we unite quantum mechanics and relativity theories?

Sometimes it takes an outsider to resolve a problem. Physicists involved with these conundrums don't have a chance to figure them out. Their training prevents them to see the forest or, at least, prevents them to accept the obvious explanation. Theory of Everything by illusion is created by an outsider who has not the package of physics history to carry.

False turns in physics history are brutally pointed out and more proper way is presented. We should start our journey into the new physics paradigm from particles, what they really are, what kind of properties they have and how they interact with each other? How many different particles actually exist? What's the deal with antimatter? Current standard model for particles and quantum mechanics will be replaced with much more simple and elegant theory.

Proper theory of everything bonds subatomic phenomena naturally with classical physics phenomena. Answers to questions like, what is mass? what is time? how inertia emerges? what is energy? or what is gravitational interaction? comes for free and naturally, also many classical physics constants turn out to be calculable entities.

In later part of our journey, we'll discover how relativity emerges from underlying particle phenomena. After all said and done, we can conclude that Einstein's biggest dream has come true!

Caution, this book will blow your mind. Have a nice ride!

Part I

Foundation

Chapter 2

Let's go!

We shall start our journey from the most fundamental element existing, from particle. Everything is made from particles, even some particles are made from other particles. Is there something more fundamental than particle? We don't know, but after our journey we might conclude that there probably isn't more fundamental element than particle.

Hypotheses

Theory of Everything by illusion (ToEbi) has only two hypotheses. **First hypothesis: The beginning of universe provided spiked, spherical, objects (particles)**. Spherical object part feels quite natural and it has been also tested extensively with electrons. So far, no deviations found.

In order to effectively interact with other particles, ToEbi hypothesizes that those spherical objects have spikes. In a sense, it's quite reasonable hypothesis. Perfect, smooth, sphere is more like a mathematical concept than physical fact. Naturally, measuring out directly those spikes is very difficult or outright impossible. Error bars of those measurements would vanish those spikes easily.

However, indirect evidence for such spikes exists. Classical double slit experiment can be used as an evidence for those spikes, but more on that later.

Second hypothesis: Interactions between particles or system of particles (SoP) are purely mechanical. In a way, second hypothesis is somewhat superfluous. Based on first hypothesis what other ways for interaction there could be? We should remember, at this point, we have only those particles previously hypothesized. On the other hand, we have to hypothesize that there are interactions between particles and that they have a mechanical basis.

Elementary Properties

What kind of elementrary properties particles have? Naturally, a particle has properties, it has radius, volume and cross section. These properties are fairly obvious. But it doesn't require a lot to figure out that particles can spin around some axis, what would prevent them from spinning? On the other hand, we can ask what makes them spin? Was there something at the beginning of our universe which made particles spin? Some kind of universal conservation of angular momentum?

How can we even measure particle spin frequency? There is no mark on a particle, a mark which we could somehow observe and count how many times it goes by in one second. No, we can't do that, at least directly. We can only say that according to ToEbi's hypotheses, particles can spin with some frequency. Developing theory with particles without spinning wouldn't be that fruitful, at least with ToEbi's hypotheses.

Where is particle mass? Shouldn't that be an elementary property? The answer is no, we shouldn't have elementary properties which can be derived from other properties and particle mass is such property.

Based on ToEbi's hypotheses, we can conclude that particle's elementary properties are its

- radius without spikes and
- spin vector.

We can define spin vector so that its magnitude equals the spin frequency and its direction equals the spin axis so that if we look at the spin vector above, particle is spinning counter-clockwise.

In reality, it would be impossible to say when the core of particle ends and spikes start to emerge.

Elementary Particles?

How many elementary particles there are? Our universe holds various particles, photons, electrons, protons, neutrons, pions and so on. Elementary particle is something that can't be made from other particles, so composite particles are obviously out. Standard model contains 17 elementary particles plus their antiparticles. At this point, we need to name only three candidates for the category of elementary particles. Those three are

- electron
- photon and
- Force Transfer Ether Particle (**FTEP**).

First two particles are already familiar to us. Force transfer ether particle (FTEP) is the one which isn't discovered yet. Universe contains many different sized particles but this particular particle is smaller than photon. Nobody can say for sure that all those FTEPs have precisely the same size, although observed similarity (e.g. particle mass) among other particles suggests that also FTEPs might have the same size.

Particle Repulsion

What would happen if a larger particle, surrounded by smaller particles, starts to spin? Certainly surrounding smaller particles would experience the spin of a larger particle. They have to experience it, after all, they all have those spikes all over their surface and evidently particles interact with each other over the distance.

Spinning larger particle would generate a flux of smaller particles into the sea made of those smaller particles. It have to generate such a flux, it's required in order to generate repulsion between larger particles, at least in ToEbi. Without repulsion particles would eventually touch each other at the elementary level and that kind of touching would cause most likely particle annihilation. But obviously, and luckily, that doesn't happen too often.

How strong this repulsion between particles can be? We can't answer the question until we have defined few other things, like mass, distance, second, energy and force.

Decay

Bigger particles do decay and there are different ways (decay channels) for them to decay. At this point, the knowledge that bigger particles do decay is enough for us. When particle decays, that phenomenon is called also particle annihilation.

There has to be the end point for particle decay chain, something so elementary that it can't annihilate no more. One might suggest that photon is such end point, but it's not. For example, photon can get absorbed by atom or it might vanish during pair production. If photon vanishes, like in previous two examples, it has turn out to be something totally different than photon. Most likely it has annihilated to multiple FTEPs. Most likely doesn't sound very convincing, but there is supportive evidence for that claim.

We should postulate that **FTEP is the elementary particle which can't annihilate**. It's very intuitive idea, after all, FTEPs are the smallest particles provided by the beginning of our universe. Surviving extreme initial conditions proves that FTEPs can bear pretty much any condition.

Inverse Decay

If particles other than FTEPs can decay then the inverse process must be possible also, putting FTEPs together must create bigger particles. That is exactly what happens when photon is emitted from atom or when photon causes electron-positron pair production. Those are totally mechanical phenomena.

Photon absorption and emission phenomenon supports the idea that photon actually annihilates to multiple FTEPs.

There are few subtleties related to inverse decay phenomenon and those will be covered rigorously in sections related to photons and their interactions with other particles.

Elementary Particle

At this point we can answer to the question: How many elementary particles there are? There is **just one elementary particle, FTEP**. Every other particle is made of FTEPs, one way or the other. In next chapter, we'll go through some common particles, photons, electrons, quarks, protons and their antiparticles. What they really are? How do they interact with each other? How particle evolution might have played out?

Chapter 3

Particle Genesis

Before describing particle genesis, it might be wise to postulate that **all FTEPs are identical in terms of their size**. We can't be 100 % sure of that, but other particles' identical properties, e.g. particle mass, support our postulation.

Was there some kind of Big Bang at the beginning of our universe? What triggered it? Was there something "before" our universe? And if so, then what created that/those thing(s)? Maybe God did it?

Big Bang?

Based on scientific evidence, it's very plausible that there was some kind of big bang at the beginning. But how something like that can happen? And because it has happened once, it must have been happened numerous times before and naturally it must happen numerous times in future too. We shouldn't conclude that our universe is the only one, why should we?

Evidently, our universe hasn't revealed us yet any signs of collision with another universe. In principle, that can happen. Maybe there are reasons why our universe hasn't collided with another universe yet? Some kind of mechanism which prevents universes to be destroyed too quickly, or we are just plain lucky in that regard.

Was there, at the beginning, some kind of singularity, which just went off all over "the place"? ToEbi is based on real matter, so with that in mind, we can speculate a bit about the nature of this possible singularity. First of all, it must have been matter, the very same matter which constructs our universe currently, but obviously wrapped up into a very much smaller volume. So far so good, but how in Earth that matter went off? Maybe God pressed the button next to the sign saying "Do not press!", or maybe not.

So if there was some kind of matter blob there should be at least another identical matter blob. That kind of assumption sounds reasonable due to observed symmetries in our universe. In reality, there can be numerous such matter blobs. Many things in our universe spin, so maybe these matter blobs were also spinning, why not? Now we have a setup which contains two spinning matter blobs. What's missing?

Collision of course! Maybe two matter blobs just crashed into each other with enormous velocity, naturally speaking about velocity is kind of silly because we don't have the concepts needed in order to determinate velocity in the era prior to the Big Bang. Anyway, these colliding matter blobs might be the generators of Big Bang. It feels very intuitive idea within ToEbi, doesn't it?

What kinds of remnants we might possible detect from the collision scenario? Naturally, we have particles, those came from somewhere or from something. If those matter blobs were spinning could that kind of phenomenon leave any marks on our universe?

Birth of Ether

Contemporary physics doesn't use word *ether* anymore, but we should use it due to respect for the previous giants in physics history. Ether is the pure background for particles to interact, and it's made of FTEPs. That's why we keep on talking about force transfer *ether* particles, they create **force transfer ether** (FTE). FTE is the medium which delivers particle's influence to other particles.

During the tremendous collision between those two matter blobs only the smallest debris survived the pressure, and as we now know, the smallest "depris" is FTEP. We might define the radius of FTEP as

$$R_0 = 1,$$

no units, just a number. It could have been 2 or 3, but we made a decision and defined it as 1. We can't use a meter because we haven't defined the unit yet.

However, we can now say that one FTEP occupies a volume

$$V_0 = \frac{4}{3}\pi.$$

Again, no units used. In case of two FTEPs put together, they occupy a volume twice that big. Because the tremendous pressure and particle movement during big bang, FTEPs couldn't form a bigger particles. Any such attempt would have failed miserably, but not for long! After certain period, the decreasing pressure would have allowed a bit larger particles to be formed.

Electron

What would be the second simplest particle which could have survived those extreme conditions? What can we say based on ToEbi? Naturally, it has to be spherical, that comes from our hypotheses. What would be the best shape in order to resist annihilation due to heavy flux of smaller particles? Sphere again!

What would be the size of that bigger particle? It can't be too big after all. Based on kissing number problem, the simplest "sphere" made from other spheres in three dimensions contains 13 spheres, so the radius of this particle is $3R_0$. But is this "sphere" spherical enough to bear the pressure? Probably not, **but it might survive in pressure under some threshold**. Cross section of this simplest, spinning, unnamed, "composite" particle would be

$$M_{unnamed} = 9\pi$$

Static cross section of this particle would be 7π.

Next, a bit bigger particle would have the radius of $\approx 5R_0$. We can't say that the radius is exactly $5R_0$ because the initial, possibly not stabile, "sphere" wasn't completely spherical. This bigger particle could have protected its FTEPs from disintegration much better than the smaller one. But still, was that particle spherical enough to bear those initial condition? We have reasons to believe that the first stabile particle which survived the Big Bang had the radius $\approx 111.234R_0$. We'll get the confirmation for our belief later on. Currently, this first stabile particle is called **electron**. Cross section of electron is

$$M_{electron} \approx 12373\pi$$

Spinning Thing

If those matter blobs were spinning before the collision then would that spinning induce spinning among those generated particles? At least it sounds plausible because the principle of conservation of angular momentum, also the rapid expansion of particles (inflation) might have further induced spinning among particles.

Close proximity of these early electrons has set the initial spin frequency for them. We haven't defined second yet, so speaking about frequency is somewhat silly, but let's say that those electrons started to spin at uniform manner.

At this point in the early universe, we had spinning electrons and FTEPs in a relative small volume. Contemporary physics might call the state of matter as quark-gluon plasma, but based on ToEbi there was just electrons and FTEPs.

Due to "high frequency" spinning those early electrons didn't compress and form bigger particles, at least in any significant scale.

Proton

In high pressure, spinning electrons must have formed all kinds of composite particles (as defined by contemporary particle physics). Currently, we have only two stabile composite particles, proton and neutron. All particles made of two or four "quarks" decay really quickly, but why composite particles made of three "quarks" are stabile? At this point, we should use quotes with the word quark.

The truth is that there is no such particles as quarks, **quarks are plain vanilla electrons**. So, why contemporary particle physics regards quarks as independent particles? The answer is, for historical reasons. Electrons were discovered for long before particle physicists discovered the structure of proton. Natural idea was that those particles inside proton must be something other than electrons, otherwise electric charges wouldn't match. Also evidence from proton collision experiments "confirmed" that those particles inside proton are heavier than electrons, case closed. But what particle physicists didn't have at the time was the real understanding of nature. We will demonstrate later how different "quark" masses are created from ordinary electrons.

What makes three electron construction so special? We'll ponder that question after we are familiar with how particles interact with each other, for now, we take the idea of proton made of three electrons as granted.

Photon

As every other particle, photon is made of FTEPs compressed together. Because photons are considerably smaller than electrons they didn't survive those early moments after the Big Bang. The simplest particle made of FTEPs was described in previous electron section. Could it be the photon? It most like is. There is few things supporting the fact, but some of those things need the concept of energy.

But due to the very small size ($R_{photon} = 3\pi$) photons interact very weakly with other photons. If two photons manage to make the collision they most likely decay to 26 FTEPs. Of course, those 26 particles conserve the properties of those incident photons.

In comparison, we have the following cross sections

- FTEP $= \pi$
- photon $= 9\pi$
- electron $\approx 12373\pi$

Photons are extremely tiny, one diameter of electron can cover roughly 37 photons put side-by-side.

Antiparticle

Contemporary particle physics describes antiparticle as a particle which in contact with its normal counterpart particle will trigger a particle annihilation. Also, some antiparticle's properties are opposite to its counterpart normal particle, for example positron (electron's antiparticle) has positive electric charge, so when electron and positron annihilate there won't be any charge left over.

Due to many misconception in contemporary particle physics, its description of antiparticle is totally inadequate. Firstly, there is no separate phenomenon as charge per se, we'll demonstrate that later on. Secondly, there is no need for separate antiparticle. Every particle (other than FTEP) is its own antiparticle.

Contemporary physics states that proton and neutron are different particles but still capable of annihilate each others antiparticles. How is that even possible if neutron and proton are different particles? We'll show later that in reality, neutron is just proton with reduced spin frequency hence these two particles are capable of annihilating each others antiparticles.

In normal conditions, larger particles repel each other due to heavy FTEP flux generated from spinning phenomenon. But if we manage to increase the spin frequency of a particle we might create a situation where FTEPs between excited particle and non-excited particle won't protect colliding particles and annihilation might occur. This happens reqularly in experiments involving high energy devices like proton guns or particle colliders. Generated "antimatter" has gained increased spin frequency and because of that, it easily causes particle annihilation. So, why high energy devices increase particle spin frequency? Once again, the answer is presented later on.

There is another route for particle annihilation. Spinning particle has its protective FTEP flux at the weakest near spin axis poles. So, if we put two particles, like two electrons, together so that their spin axes poles collide head-on we get particle annihilation, right? Not necessarily, on top of that precice collision arrangement, also spin vector directions matter. If those spin vectors have same direction we won't achieve annihilation event. It's quite easy to understand why not. Let's imagine a situtation where we put to spinning car tires together side-by-side. They both spin at the same rate and to the same direction, obviously there won't be any problem in this scenario, at least if no perturbations exist.

It doesn't require much to imagine what would happen if those those tires were spinning into opposite directions before we put them together. We can imagine the smell of burning rubber, thick smoke, after a while explosion and eventually flying pieces of rubber. Pretty much same happens when two electrons with opposite spin vectors make the contact spin axes poles head-on. Naturally, in case of particles, which has extremely high spin frequency, things happen extremely quickly. We'll cover particle annihilation processes in more detail after we have covered few other fundamental issues.

Information so far has given us the keys into a totally new world. Foundation for the utilization of antimatter as a source for energy production is described.

Hydrogen

Hydrogen is the simplest atom, alone proton surrounded by alone electron. Even though hydrogen's apparent simplicity it has been an enourmous source of misconceptions in the history of particle physics. The biggest blunder might have been the concept of charge and its amount in case of proton. The fact, that electrons are attracted towards protons but repelled away from other electrons has nothing to with charge. Concept of charge is based on inadequate knowledge of reality as we are about to realize.

Eventually early universe cooled enough and allowed hydrogen atoms to emerge. Before that event, electrons couldn't bond with protons, they were just bouncing around within the soap made of protons, other electrons and FTEPs. From that early "bouncing period" we have inherited cosmic microwave background (CMB).

We have covered so far the early and significant particles in our universe. Due to lack of a proper tools, used mathematics has been very elementary so far, but things are about to change.

Chapter 4

Interactions

Having all these marvelous particles without any interactions would be a very boring story indeed. Luckily particles exist in high enough density making them capable of interact, particles collide, annihilate and create new particles with each other. There is no need for the exotic gauge bosons, simple mechanistic interactions between described particles do the trick.

FTEPs

As being the smallest particles, FTEPs can't annihilate, but like any other particle they can spin and collide with another particles. In many cases, FTEPs function as a buffer or a bearing between larger particles and save them from annihilation. Naturally, as a by-product, FTEPs can exchange the spin frequencies between larger particles. It all occurs in very natural and intuitive manner. We can imagine two larger gears connected with smaller gear(s), delivering the exact same spin frequency is obvious.

Spin frequency delivering phenomenon is the most essential factor when we study the decay chains of particles generated from high energy particle collisions. Also the decay process of free neutron is ignited by this phenomenon. Free neutrons, in a bottle used in experiment measuring free neutron decay rate, eventually make contact with another particles (at first on the inner surface of a bottle) which possesses the surrounding dominant spin frequence. Due to those contacts, neutrons are eventually spead up to the dominant spin frequency.

Spinning larger particles generate volumes where FTEP density is very high when compared to for example a vacuum. The most obvious place to look for high density condition would be a close proximity to protons. Three closely spinning electrons generate extremely high FTEP density between and around them. Naturally such high local FTEP density diminishes quickly as we move a way from those electrons, never the less, surrounding volume provides a fruitful environment for other particles to interact with.

Larger Particles

To the point of particle annihilation, larger particles interact with each other through FTE. Let's imagine a stationary, spinning, larger particle within a part of FTE where the density equals in every direction locally. What might happen to that particle? Not that much, it just keeps on spinning forever. But what would happen if we put another particle close to it? It depends on few things, but let's say that those particles have an equal size and spin vectors are parallel and their magnitudes match.

In the first scenario, let's imagine that the spin vectors have the same sign. Obviously, FTEP fluxes from these spinning particles have opposite directions (you can visualize this by rotating two balls to the same direction). FTEPs in one flux collide with incoming FTEPs from the other flux and due to equal, but opposite direction, momentum FTEPs generate an attractive buffer between these larger particles.

Besides an emerging buffer what other phenomena occur? Denser FTE on another side of a spinning particle puts it on a move. Same kind of phenomenon is familiar to everybody in many everyday phenomena, for example driving a vehicle on snowy road and all the suddenly tires on the ditch's side cut into thicker snow bed, escaping the incoming accident requires a good driving skills and a shear luck. Or if we pour water into a children's swimming pool, floating toys near the incoming water get sucked into the stream and so on. Spinning particle gets a better "grip" from denser FTE and starts to move towards it, at least to the certain point.

Emerged buffer on the other hand prevents particles from moving too close to each other. In balanced situation, the buffer between particles is so dense that spinning particles pretty much maintain their positions, just like inside proton or in the configuration of single proton and electron (a.k.a. hydrogen atom).

In the second scenario, spin vectors have opposite signs. This time FTEPs *between* particles won't generate the attractive buffer, quite contrary. FTEPs do collide in this scenario also but due to their heading the attractive buffer emerges, not between the particles, but on the "outer" sides of particles.

With a very high spin frequency all these phenomena happen very quickly. Normal outcome from (same sized) heavier particles' interaction is just a particle flyby or an elastic collision.

Particle vs. The Rest

Our universe consists of a vast amount of particles. From the perspective of a single particle, how does it all plays out? It hasn't required much that electrons in early universe lost their uniform alignment and started to bounch around. Eventually, random spots in the early universe started to cumulate surrounding particles and generated particle vortex, more particles meant denser FTE around them, which lead to a greater attraction between the area and surrounding particles. Eventually, this cumulation phenomenon gave birth to the structure of our universe and in fact, the birth is still evolving.

If we study single electron or proton under the influence of a planet, what's really going on? Obviously, this particle is interacting with a planet, it experiences FTE densities generated by this planet. Dimensional magnitudes of these players are vastly different. How single electron or proton is capable of sensing which "way to spin at"? Differences between FTE density around it must be insignificant. Despite the insignificansy, those particles know exactly which way to go, how is that possible?

Rotation of a planet is the answer. Without it, particles would move pretty much under the quidance of "electro-magnetic" phenomena. Naturally, in that kind of hypothetic situation EM phenomena would act as gravitational interaction. After all, everything spin, particles spin, planets and stars spin, galaxies and galaxy clusters spin and most likely the whole universe spins.

Spinning object, no matter if it's particle or stellar object, generates FTEP flux from it. In case of particles, generated flux is very powerful because the high spin frequency, but stellar objects, like Earth, spin very slowly compared to particles, hence generate very weak FTEP flux.

No matter how powerful this flux is, it most certainly makes the difference. FTEPs coming towards particle are, indeed coming, *towards it.* Amount of passing by FTEPs equals in the horizontal plane, so the particle's interaction direction is quite trivial. Described mechanism behind gravitational interaction hints about the mechanism behind inertia. One other thing being hinted is the magnitude of gravitational interaction.

Mass

In order to gain some prediction power we have to define a few new properties and their relationships with each other. So far we have our fundamental particle properties, radius and spin vector. Our first *derived* particle property is mass. We define, **Particle mass is its cross section**.

Cross section of particle is the area involved within particle interaction. Other particles or systems of particles interact with this cross section, smaller the cross section smaller the magnitude of interaction. Actually there is a threshold radius which a particle must exceed before it's capable of experiencing interactions with other particles or systems of particles. Particles smaller than this threshold appear as massless even thou they have mass, more on this phenomenon later.

List of particles introduced so far with their radius.

- proton: $\approx 2.3074 * 10^{-14}$ m
- electron: $\approx 5.3848 * 10^{-16}$ m
- photon: $\approx 1.4523 * 10^{-17}$ m
- FTEP: $\approx 4.8410 * 10^{-18}$ m

Measured proton radius is actually much smaller because used measuring techniques. Hitting proton with other particles, like electrons, gives us only the size of proton *hit* by electrons. Inner structure of proton functions as a cushion, larger the energy of hitting electrons then smaller the size of proton looks like, up to the point where proton annihilates.

ToEbi Metric

While studing particles and their interactions we'll need two additional concepts, time and length. Everybody has his/her opinion about the concepts of time and length but in physics second is defined with a help of atomic events. Certain amount of certain events constitute one second, currently the official duration of one second is measured with caesium atomic clocks, but researchers are looking for even more fine grained ways to measure time.

Meter is also defined with a help of atomic events combined with speed of light in vacuum. Currently one meter is the distance travelled by light in 1/299 792 458 of a second.

So, currently time and length are fixed but mass is out of the equation (so to speak). Based on ideas presented so far we might conclude that all these three units are linked together. Without particle spin frequency there wouldn't be any interactions nor particle mass to observe. Also, particle spin frequency is a factor in how fast particles interact, including subatomic events. We postulate **ToEbi Metric** as

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

What does this postulation gives us? Remember, cross section equals πr^2. If we select any reference frame in our universe then, by selecting $c = \pi$, following applies

$$\frac{\pi m^2}{m * s} = \pi \rightarrow \frac{m}{s} = 1.$$

It means that particle in our universe has its units, length and time, fixed. If meter changes then duration of second changes accordingly. For example, if we measure that speed of light is x m/s and it's constant in a vacuum then this fact applies everywhere in our universe!

Energy

What is energy? What is the mechanism of energy? Well, we have particles with different masses and spin frequencies. Electrons have the same spin frequency (the origin of this same spin frequency was described in Particle Genesis chapter). Because protons are made of plain vanilla electrons they also have the same spin frequency. Photons have mass, even thou poorly interacting, and various spin frequencies. Best candidate for particle energy might be a combination of both mass and spin frequency, therefore we define **particle energy as First law of ToEbi**

$$E = m * f$$

where m is mass and f is spin frequency (magnitude of spin vector) of a particle. Units of particle energy are therefore

$$\frac{kg}{s}$$

which obviously differ from the units of contemporary energy definition.

Force

Particles interact with their masses and spin frequencies through the local FTE. Naturally the distance between two particles and their spin vector orientations are significant factors. FTEP flux generated by spinning particle decreases, for purely geometric reasons, in inverse square fashion. Also in a case where two particles have spin vectors pointing into an opposite directions interaction pushes particles apart.

We define **force between two non-composite particles as Second law of ToEbi, case 1**

$$\vec{F} = (G_1 + G_2)\frac{M_1 M_2}{r^2}(\cos\alpha\vec{x}_1 + \sin\alpha\vec{x}_2)$$

where M is mass, α is angle between spin vectors, r is distance between particles (center-to-center) and

$$G = \frac{1}{2}f^2 \text{ (**G factor**)},$$

where f is particle spin frequency.

Second law of ToEbi has two unit vectors, $\vec{x}_1$, $\vec{x}_2$. First one is quite obvious, it points towards another particle. Second vector $\vec{x}_2$ is a unit vector perpendicular to the plane formed by $\vec{x}_1$ and $\vec{f}_x$ in the direction given by the right-hand rule.

Units of particle interaction are

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

which based on ToEbi Metric equals c^2.

So, the first force component points towards (or away from) another particle and the second force component points perpendicularly to the particle spin axis. If two particles don't spin in parallel fashion then the second force component makes them fly away.

Second law of ToEbi, case 1 applies to spherical stellar objects also. Even thou the scales differ enormously, the same phenomena are involved in both interaction types.

What would happen if interacting particles had a significantly different masses? Or in a case where a single particle interacts with a planet? What would be differently from the same mass scenario? Composite particles, as well as stellar objects, generate FTEP flux around them, but unlike in the case of electrons, ejected FTEPs have not same kind of heading therefore force between these objects is always attractive.

We define **force between particle and more massive spherical SoP as Second law of ToEbi, case 2**

$$\vec{F} = G_s\frac{M_s M_p}{r^2}(\cos\alpha\vec{x}_1 + \sin\alpha\vec{x}_2)$$

where G_s is G factor for a SoP, M_s is mass of a SoP, M_p is a particle mass and α is angle between **particle spin axis** and the plane perpendicular to the line connecting mass points.

Earth's calculated G factor is $\approx 6.7347 * 10^{-11} \frac{1}{s^2}$ which differs from measured gravitational "constant" G approximately 0.9 %. Why is the difference? We have two possible explanations, either Second law of ToEbi doesn't hold and ToEbi is falsified *or* Earth as whole doesn't spin at the same rate than its surface does.

Earth itself is not totally solid sphere, it has different layers and some of these layers are more or less liquid. Such a structure allows different spin frequencies for different layers, for example Earth surface can spin a bit faster than its inner core and so nicely explains the difference between G factor and measured gravitational constant.

Different spin frequencies of layers of a stellar object might give a rise to a magnetic field (Dynamo theory). So if we calculate stellar object spesific G factor we have to remember that in reality the actual, measurable, value might differ a bit.

Dampening Factor

Obviously spinning SoP, like proton or planet, has an effect on how strongly two separate particles (particles 1 and 2) interact under the influence of this SoP. FTEP flux generated by SoP dampens FTEP fluxes generated by these two separate particles. We must acknowledge the phenomenon when we make force calculations. Let's assume that we have those two particles on a same level parallel to the surface perpendicular to a line connecting particle and SoP. We define **dampening factor as Third law of ToEbi**

$$T_{SoP} = \frac{s^{-2}kg}{m} \frac{x_{1,SoP}^2}{f_{SoP}^2 * M_{SoP} * x_{1,2}}$$

where $x_{1,SoP}$ is distance between the center of particle 1 and the surface of SoP, f_{SoP} is SoP spin frequency, M_{SoP} is SoP mass and $x_{1,2}$ is distance between surfaces of particles 1 and 2. But if we calculate forces between unbound particles we can say that $x_{1,2}$ equals a distance between particles.

However, if we apply our force equation (case 2) and dampening factor to solid spheres we might possess (marbles, golf balls, etc.) we must measure distance $x_{1,2}$ from surface-to-surface. Conducted modified Cavendish experiment [1] acknowledged by Zhu Yonghuan has confirmed that ToEbi's equations work with solid spheres on Earth.

Next Steps

At this point, we have everything we need in order to take over quantum mechanics, standard model for particles and Einstein's relativity theories. Laid out foundation also cleans up many classical physics concepts and removes few constants from its map.

Only true theory of everything is capable of for all this and more.

Bibliography

[1] Zhu Yonghuan

mysterious vortex force - gravity partner

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http://www.sea3000.net/zhuyonghuan/20081009181348.php