Introduction to

Theory of Everything by illusion

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Chapter 1

Preface

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 utilization of antimatter.

Main problem with the contemporary theoretical physics is its deviations and shortcomings from reality. 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 massless particles, 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? Some people call these conundrums as a crisis in physics, even though more proper description would be a catastrophe.

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 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. More on particle mass later.

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. In any case, FTEPs are smaller than photons. How much smaller? How can we measure particle size at the first place? Well, we can't, but we shouldn't care about that just now.

Observed similarity (e.g. particle mass) among other particles suggests that also FTEPs might be pretty much same sized, but we shouldn't take same size as granted, at least for now.

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

Can we postdict various particle sizes and ultimately particle masses from the size of FTEP? We have to remember that particle size and particle mass are different things. Particle mass will be defined when we need the concept for the first time.

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 percent 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 is some kind of reason 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 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 set up 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?

We'll come back to these issues later, but now we should focus solely on our particles.

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 next 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. 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 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.