

# Why Unification of Gravity and Standard Model is Impossible?

Sylwester Kornowski

**Abstract:** At the beginning of the inflation there was the liquid-like Higgs field composed of the non-gravitating tachyons. During the inflation, such superluminal Higgs field partially transformed into the Einstein spacetime that is composed of the luminal neutrino-antineutrino pairs so there is the two-component spacetime. The stable neutrinos are the lightest gravitational masses that acquire their gravitational mass because of their interactions with the non-gravitating Higgs field - it is the Higgs mechanism. All particles more massive than neutrinos are built of the confined and/or entangled neutrino-antineutrino pairs and/or neutrinos and they are the Principle-of-Equivalence relativistic particles. The gravitational fields are the gradients produced by masses in the non-gravitating superluminal Higgs field, whereas the massive Standard-Model particles are built of the luminal Einstein-spacetime components and/or neutrinos. The very different properties of the Higgs field and Einstein spacetime cause that unification of Gravity and Standard Model within the same methods is impossible. Emphasize that the unification is impossible also because time is going in different way in General Relativity and Standard Model.

## 1. Introduction

The General Relativity (GR) leads to the non-gravitating Higgs field composed of tachyons [1A]. On the other hand, the Scale-Symmetric Theory (SST) shows that the succeeding phase transitions of such Higgs field lead to the different scales of sizes [1A]. Due to the saturation of interactions via the Higgs field and due to the law of conservation of the half-integral spin that is obligatory for all scales, there consequently appear the superluminal entanglons responsible for the quantum entanglement, stable neutrinos and luminal neutrino-antineutrino pairs which are the components of the luminal Einstein spacetime (it is the Planck scale), cores of baryons, and the cosmic structures that evolution leads to the dark matter, dark energy and expanding universes [1B].

Here we show as follows. At the beginning of the inflation there was the liquid-like Higgs field composed of the non-gravitating tachyons. During the inflation, such superluminal Higgs field partially transformed irreversibly into the Einstein spacetime that is composed of the luminal neutrino-antineutrino pairs so there is the two-component spacetime. The gravitational fields are the gradients produced by masses in the non-gravitating superluminal Higgs field, whereas the massive Standard-Model (SM) particles are built of the Einstein-spacetime luminal components and/or neutrinos. The very different properties of the Higgs

field and Einstein spacetime cause that unification of Gravity and Standard Model within the same methods is impossible. Moreover, the origin of time shows that time is going in different way in GR and SM.

## 2. The problem and solution

We will try to prove that the term “force” does not mean the same in electromagnetism and the nuclear strong and weak interactions described within the quantum Standard Model and gravity described within the classical General Theory of Relativity.

SST shows that the origin and value of the gravitational constant,  $G$ , result from the interactions of the neutrinos with the non-gravitating superluminal Higgs field [1A]. Due to the first phase transition of the Higgs field at the beginning of the inflation, there appeared the superluminal binary systems of closed strings (they are the entanglons responsible for the superluminal quantum entanglement). The two components of an entanglon have parallel spins and antiparallel internal helicities. The viscosity of the non-gravitating tachyons the Higgs field and the entanglons consist of causes that an entanglon transforms the chaotic motions in the Higgs field into two antiparallel half-jets. Neutrinos consist of the entanglons so neutrinos produce sets of divergent jets. The tachyons in the jets collide with the chaotically moving tachyons in the Higgs field so there appears a gradient in the Higgs field – it is the gravitational field. It is the Higgs mechanism – mathematically it is described in paper [1A].

On the other hand, SST shows that the nuclear weak interactions are carried by the virtual or real condensates composed of the confined luminal neutrino-antineutrino pairs [1A]. SST shows that the nuclear strong interactions of baryons are carried by both the binary systems of loops (i.e. pions) composed of the entangled luminal neutrino-antineutrino pairs and by gluons that are the rotational energies of the neutrino-antineutrino pairs [1A]. SST shows that the electromagnetic interactions are carried by both the electron-positron pairs composed of entangled or confined neutrino-antineutrino pairs and photons that are the rotational energies of the neutrino-antineutrino pairs. Properties of gluons and photons are different because their carriers have three different internal helicities/colours so they behave differently in fields having internal helicity (the nuclear strong field has internal helicity) and having not internal helicity (the gravitational and electromagnetic fields have not internal helicity). It leads to conclusion that outside the nuclear strong fields the gluons transform into photons – it is not true that there is some confinement of free gluons inside nuclear strong fields.

We can see that the gravitational fields are directly associated with the non-gravitating superluminal Higgs field whereas the Standard-Model interactions are directly associated with the gravitating luminal Einstein spacetime. The very different properties of the two components of spacetime cause that unification of GR and SM within the same methods is impossible. Notice as well that the irreversible splitting of the GR and SM took place during the inflation.

Emphasize as well that time is going in different way in GR and SM.

Time in GR is relativistic. We can define local unit of time in GR as the mean time between collisions of the tachyons. But there are the gradients so in local gravitational field with lower number density of tachyons time is going slower. On the other hand, number density of the tachyon jets is higher closer and closer gravitational mass so there is more and more collisions of tachyons so number density of tachyons is lower and lower so closer and closer to a gravitational mass time is going slower and slower. We can see that in GR is not a global universal time.

In SM time is going in a different way. There are not produced gradients in the Einstein spacetime by charges. For example, the electromagnetic interactions follow from the production of the virtual electron-positron pairs (they are the virtual dipoles) – the electric

charges polarize the field composed of such dipoles. Only very close to the bare virtual pairs the mass density of the Einstein spacetime is disturbed but, generally, we can assume that in very good approximation the Einstein spacetime is flat so we can say about a global time in the SM concerning the moving wave functions. Just the Einstein spacetime tries to be flat so a fluctuations cause that there appear the condensates, loops, virtual pairs, and so on, which are not the parts of the Einstein spacetime. But in Quantum Physics (so in SM as well) we can define time in a different way. For example, we can define the units of time as the periods of spinning of fermions or components of bosons. There are different units of time concerning periods of spinning of loops. Moreover, due to the law of conservation of spin, relativistic mass of pions decreases with increasing energy of baryons so there appears the running coupling for the nuclear strong interactions [1A]. We can see that definition of time in SM can be arbitrary and it causes that the time dependent Quantum Physics is such messy. In SM most important should be the statistical distributions of physical quantities i.e. equations dependent on spatial coordinates and such description dominates in the Scale-Symmetric Theory.

### 3. Summary

At the beginning of the inflation there was the liquid-like Higgs field composed of the non-gravitating tachyons. During the inflation, such superluminal Higgs field partially irreversibly transformed into the Einstein spacetime composed of the luminal neutrino-antineutrino pairs so there is the two-component spacetime.

The stable neutrinos are the lightest gravitational masses that acquire their gravitational mass because of their interactions with the non-gravitating Higgs field – it is the Higgs mechanism.

All particles more massive than neutrinos are built of the confined and/or entangled neutrino-antineutrino pairs and/or neutrinos and they are the Principle-of-Equivalence relativistic particles. The gravitational fields are the gradients produced by masses in the non-gravitating superluminal Higgs field, whereas the massive Standard-Model particles are built of the luminal Einstein-spacetime components and/or neutrinos.

The very different properties of the Higgs field and Einstein spacetime cause that unification of Gravity and Standard Model within the same methods is impossible. Notice as well that the irreversible splitting of the GR and SM took place during the inflation.

Emphasize that the unification is impossible also because time is going in different way in General Relativity and Standard Model.

### References

- [1] Sylwester Kornowski (2015). *Scale-Symmetric Theory*
- [1A]: <http://vixra.org/abs/1511.0188> (Particle Physics)
- [1B]: <http://vixra.org/abs/1511.0223> (Cosmology)
- [1C]: <http://vixra.org/abs/1511.0284> (Chaos Theory)
- [1D]: <http://vixra.org/abs/1512.0020> (Reformulated QCD)