The Difference Between Opposite Charges

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Abstract: This is partially a review article. On the basis of the Scale-Symmetric Theory (SST), we explain the difference between the N and S magnetic monopoles, between the opposite electric charges, and between the different weak charges of neutrinos. Such differences follow from behaviour of the components the tori/charges consist of.

1. Introduction

According to the Scale-Symmetric Theory (SST) [1], all charges are tori. Charges of the neutrinos consist of the spin-1 binary systems of closed strings (entanglons) and are immersed in the SST Higgs field while electric charges and magnetic monopoles consist of the entangled Einstein-spacetime components (they are the neutrino-antineutrino pairs).

2. Weak charges of neutrinos [1]

There are four possibilities. For the two different internal helicities of the torus/weak-charge (as a whole) of lightest neutrinos (for the same toroidal speed there can be opposite poloidal speeds so we have tori with left-handed and right-handed internal helicity), spins of all entanglons can be perpendicular to surface of the torus and they can all point outside the torus or they can all point inside the torus. In reality, there can be in existence neutrinos composed of entangled three different lightest neutrinos so we have three different species of neutrinos.

3. Electric charges [1], [2]

The Einstein-spacetime components on the torus/electric-charge of proton behave the same as the entanglons on the torus of lightest neutrinos so there are also four possibilities. But the SST initial inflation field (as a whole) had left-handed internal helicity (it leads to the matter-antimatter asymmetry) so protons and positrons have the left-handed internal helicity while antiprotons and electrons are internally right-handed. Emphasize that the internal helicities differ from the external helicities – the external helicity defines whether the spin and velocity of a particle are parallel or antiparallel.

4. Magnetic monopoles/charges [3]

In magnetic monopole, the spins of the Einstein-spacetime components are rotated by $\pi/2$ radians in relation to the orientation in the electric charge of the proton or electron. It means that the spins of the Einstein-spacetime components are tangent to surface of the torus/magnetic-charge. Spin motions on the surface of the torus are the poloidal motions. But

the poloidal loops a magnetic monopole consists of can be left-handed or right-handed so we have the N and S magnetic monopoles/charges.

5. Can there be in existence "magnetic" neutrinos?

We showed that the weak charges of neutrinos and electric charges are built in a similar way. Can there be in existence some neutrino analogs to the magnetic monopoles? Can such objects be stable? Notice that there is the self-interaction of the entanglons because they are immersed in the SST Higgs field [1].

6. Summary

We showed that charges differ in internal helicity and/or orientation of spins of the components the tori-charges consist of.

References

[1] Sylwester Kornowski (23 February 2018). "Foundations of the Scale-Symmetric Physics (Main Article No 1: Particle Physics)" http://vixra.org/abs/1511.0188

[2] Sylwester Kornowski (14 February 2019). "Foundations of the Scale-Symmetric Physics (Main Article No 2: Cosmology)" http://vixra.org/abs/1511.0223

[3] Sylwester Kornowski (15 February 2019). "Properties of Dark-Matter Particles" http://vixra.org/abs/1902.0270