Date: Friday, September 18, 2015, Time: 10:11:29

Hunting the Higgs at the Large Hadron Collider

At this moment the property called mass of elementary particles still is a not understood property. The mass of the top-quark is about 175 GeV and the mass of the assumed spinless elementary Higgs boson is measured at the LHC at about 125 GeV. As a result only the top-quark of all elementary particles of the Standard Model is heavier than the observed first glance of the Higgs boson.

The very rarely detected spinless Higgs-bosons have an average decay-time of order 10^{-22} seconds.

How rare is the Higgs-boson?

Observed amount	Type of particles
10^{10}	Bottom quark pairs
10^{8}	$W^{\pm}$ bosons
10^{7}	Z bosons
10^{5}	Top quark pairs and Higgs bosons

So, only 1 Higgs for 100.000 Bottom quark pairs.
In total an amount of about 174.000 Higgs-bosons were detected during the first run of the LHC, which turned into: 397 pairs of photons, 10 Z-boson pairs which decayed into $e^{+}e^{-}$ and $\mu^{+}\mu^{-}$ pairs and about 60% decayed into b-quark pairs.

The maximum allowed mass of the Higgs boson should on experimental grounds be less than 145 GeV. The detected mass of the Higgs-boson at 125 GeV points to the 1 TeV energy level for new physics to appear. This is why new physics, i.e. new elementary particles, are expected in the energy range just above 1 TeV.

The major new search in the second run of the LHC will be testing if Super-Symmetry is correct or incorrect.

Super-Symmetry cannot be correct on mathematical grounds. Experimentally all elementary bosons only possess one species for all different interactions. For the two massless bosons, the spin1 photon of the anti-symmetrical EM-field and the invisible spin2 graviton of the symmetrical gravitational-field, it is obvious that no more species are possible, because the only difference between species, or families, is the rest-mass. However the weak-nuclear forces also do not posses more so-called “families”. The glue of quarks is in the SM represented by spin1 gluons. However the SU(3)-gauge-symmetry only describes quarks as spin1½ elementary particles without isospin. So, gluons must be spin1 quark anti-quarks combinations. Our universe has 3 families of fermions. So, gluons are also possible in 3 different families with only different rest-masses. In the SM these combined particles are called mesons. If anyone would like to learn about our reality (QM), please also read Spin in QM.pdf.

The detected Higgs-resonance exists only for about 10^{-22} seconds. The distance between an electron and the nucleus of an hydrogen atom is about $8.5 \cdot 10^{-14}$ m. When the Higgs-field travels with the maximum light-speed it reaches a maximum distance of $3 \cdot 10^{8} \cdot 10^{-22} = 3 \cdot 10^{-14}$ m = 0.0003 Å. So, even for the simple hydrogen atom the interaction can only be described on EM-grounds, because the Higgs field cannot travel for the distance between the electron and the hydrogen nucleus without decaying. This is why the Higgs-field cannot explain mass in this simple QM example. And because the Higgs-boson is the second heaviest elementary particle it will most certainly not travel with the maximum light-speed.

In 1953, less than two years before his death, Albert Einstein said at Princeton that the matter that explains mass must itself be massless, in other words, that the graviton is just like the photon massless and as a result of that always moves with the maximum light-speed. Only a massless force-particle is able to attract across galactic distances between stars and planets. Unfortunately Einstein did not understand the nature of the spin2 graviton.

This is explained in Spin in QM.pdf.

Mathematically it can be shown that the expanded harmonic oscillating motion in the 2D-plane perpendicular to the direction of movement of the spin2 graviton repeats itself twice by a rotation of a complete circle of 2π radians around the direction of motion (SR-worldline). This is why curvature of the only possible 4D-spacetime must be included in two independent mathematical ways. And when rewriting the SM of QM in compliance with the CAP, one just has to describe curvature in all three orthogonal spacelike directions. Not only in the direction of motion, as described for the first time by Arnold Schwarzschild during the 1st world-war, but also in the 2D-plane orthogonal to the direction of motion to explain spin on mathematical principles. In other words, the usually analyzed QM does not comply to the CAP, because it analyses elementary particles as point-particles. When Prof. Dr. Jan de Boer told me that the SR QFT of the SM complies to the CAP he only showed me that he himself did not understand GR, i.e. that spin2 mathematically implies a dual character. And of course I do understand why string physicists do not like it if it turns out that all used "string" analysis is wrong on physical grounds. Fermions always possess masses greater than zero and this is why they can only be analyzed in spacetime that allows mathematical knots, i.e. 4D-spacetime. But simply, because on mathematical grounds, this shows an extreme, because unambiguous, restriction of our possible mathematical analyzes: ***Any valid mathematical analysis of our reality must use relativistic 4D-spacetime.*** Albert Einstein didn't use a completely symmetry analyzed based description in his theories of relativity. He used real 4-vectors to describe 4D-spacetime, which resulted in a not symmetrical analysis. Einstein used real co- and contravariant 4 vectors x_μ = (ct, -x, -y, -z) and x^μ = (ct, x, y, z) respectively. Here the spacelike components differ by a -1. When describing the 4-vectors symmetrical both sorts of vectors become identical x_μ = (ct, ix, iy, iz) and x^μ = (ct, ix, iy, iz) and the upper and lower indices of the same letter now only imply contractions "multiplication" of the indices. Using this symmetrical spacetime basis at once shows why space and time coordinates are all orthogonal. But one can imagine the time-direction in the same direction as the direction of motion. Let's choose the z-axis as the direction of motion. This yields two orthogonal planes in which curvature must be described: (ct, iz)-plane describes macroscopic curvature of planets around a sun and the (iρ, iφ)-plane describes microscopic QM curvature, the conserved angular-momentum of an oscillating elementary particle (helicity) and why particles possess energy proportional to a frequency. The QM effect at-once shows that elementary particles cannot be described as simple point-particles, but must be described as extended elementary particles in the 2D-plane perpendicular to the direction of motion. This extensiveness must be described by harmonic oscillation in the 2D-plane orthogonal to the direction of motion and explains why elementary particles possess energy proportional to a frequency and a resulting explicitly described conserved spin ≥ ½ħ.

This is why the hunt for the Higgs boson is a lost hunt. Spinless elementary particles can ***not*** possess energy proportional to a frequency! What do we actually live in a very simple mathematical imaginable and understandable reality. This is why I am very sorry that Robbert Dijkgraaf, Edward Witten and Jan de Boer didn't enable me to explain QM to them. Because in my eyes it is experimentally already proven that SuSy is incorrect. And what will be left over of strange Super-String theories after this logical fact!?!

I just wait and see, but fortunately without stress now because I enjoy company of horses, instead of silly string physicists. In horse eyes the only possible reality just is a 4D-spacetime reality, just because it logically cannot be otherwise. There are, after all, almost always knots in their hair!

Best greeting to all readers of this article about the only possible Theory Of Everything!

Ir. M.T. De Hoop
Bouwensputseweg 6
4471RC Wolphaartsdijk
The Netherlands
Phone: 0 (+031) 6 12 66 82 08
E-mail: tomdehoop@solcon.nl
Hompage: http://quantumuniverse.eu