Time for New Cosmology !

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Abstract.

The Higgs-particle could be a dark matter particle! It is not enough to confirm spin 0 and + parity for the Higgs-like particle to let it be the Higgs-particle. The Double Torus hypothesis should be involved. A dark matter particle in this new framework could also have spin 0 and + parity under condition it contributes to gravity, but its properties can also contribute as negative mass to anti-gravity.

Beyond the Standard Model.

The Standard Model (SM) of particle physics is the best conventional model for what is going on at subatomic scales. But the Standard Model is a heuristic model with about 26 parameters that have be entered as adjustable parameters. This is not the way a theory should predict values within its framework. It might lead to misinterpretations of real discoveries. A real discovery is expressed in 5 sigma-certainty.

The Standard Model pretends to have found its predicted a Higgs-field. In July 2012 a Higgs-like particle was measured with almost 5 sigma-certainty with a mass-value at 125 GeV/c^2. But the demanded spin 0 and + parity were determined firstly in March 28 2013 with 2 to 3 sigma-certainty [1]. That certainty is not enough! For another reason this is important, which I explain here:

The Standard Model cannot predict the existence of dark matter and dark energy. These components constitutes the majority of matter in the Big Bang cosmology (96%). Denying dark matter also contradicts the observations of gravity in galaxies. So, a discrepancy between the Higgs-like particle and a dark matter-particle could easily lead to misinterpretation of what the discovery eventually is.

Additionally the vacuum energy density has already a huge discrepancy. Vacuum energy density, predicted from quantum dynamics and Relativity separately, differ a factor 10 with 122 zeros. So, now two huge discrepancies play a role in the confirmation of the Higgs-particle discovery, wherein the importance of spin 0 and + parity are of main interest. Why?

Since September 2009 a new cosmology is introduced, based on new dark energy and dark matter, and their contribution to gravity. This framework is named the Double Torus hypothesis for which several papers are available in the vixra-archive [2]. In this framework dark matter can also have spin 0 and + parity on condition that it contributes to gravity, because its properties also allow it to contribute to anti-gravity (negative mass). Therefore it is of great importance to check more properties of the Higgs-particle, before taken it for granted.

I explicitly point out that in the Standard Model the Planck-mass is unnatural: It cannot be compared to any observed particle in nature. Maybe the Standard Model is too vulnerable for the big questions? Was there a Big Bang or something else? What is dark energy and dark matter and how do they interact? What is their connection with gravitation? The Standard Model does not describe gravitation.

But the Standard Model is not the only one. Even the five-complementary string-theories, named as M-theory, cannot account for support of their quantum-gravity predictions by a reasonable amount of experiments.

So, let us be cognitive so far, the LHC has found:

1. no strings or branes (predicted in the M-theory).
2. no super-symmetry and super-particles, called ‘sparticles’ (predicted in the M-theory), where ‘neutralinos’ are a candidate for dark matter.
3. no WIMPs (predicted in the M-theory), and also a candidate for dark matter.
4. no extra-dimensions (predicted in the M-theory), to overcome the lack of gravity at subatomic scales.
5. no magnetic monopoles (predicted by the Cosmic Inflation of the Big Bang).
6. no mini-black holes (predicted as the smallest possible black holes, according to General Relativity related to the Planck-mass dynamics.
7. no gravitons and KK-gluons (predicted from a combination of Kaluza-Klein dimensions and a Randall-Sundrum five dimension-description at sub atomic scales).
8. no evidence for ADS/CFT duality, an anti-de Sitter space (only vacuum-energy) causing gravity combined with conformal field theory such as a quantum field without gravity.
9. no colorons (massive hyper-gluons interacting as an extension of the strong force at low energies).
10. no lepto-quarks (combination of a lepton and quark that violates the Standard Model).
11. no lazy photons (these particles decay slowly and are supposed to hang around in collision-detectors).
12. no fractionally charged particles.

So the conclusion I posit here is: The Higgs-particle could be a dark matter particle! The Double Torus hypothesis should be involved. The properties of dark energy and dark matter are different than assumed in the Big Bang cosmology.

References:

[1] http://indico.cern.ch/conferenceDisplay.py?confId=240194; Higgs spin 0 and + parity results from ATLAS and CMS, by Bruno Lenzi (CERN), Alessio Bonato (CERN), Thursday, 28 March 2013 from 11:00 to 12:00 (Europe/Zurich), at CERN. Description: Studies are described characterizing the spin and parity of the observed Higgs boson by ATLAS and CMS, including ~5 fb-1 of data collected at sqrt(s) = 7 TeV and ~20-21 fb-1 at 8 TeV. Results are presented using the H->ZZ->4l and H->WW->2l2nu final states in both ATLAS and CMS, as well as the H->gamma-gamma final state in ATLAS. The ATLAS ZZ results exclude spin-parity hypotheses of 0- and 1+ at greater than 97% CL when compared to the 0+ hypothesis, and the CMS ZZ results exclude the 2+ hypothesis with minimal couplings to vector bosons at greater than 98% CL, and the 0-, 1+, and 1- hypothesis at greater than 99.8% CL with respect to the 0+ hypothesis. The ATLAS WW results exclude the 2+ hypothesis with minimal couplings at 95% CL with respect to 0+. The ATLAS di-photon results exclude the 2+ hypothesis with minimal couplings and pure gluon fusion production at greater than 95% CL. Additional spin-parity hypotheses which have been tested give of an observed separation of less than 2 sigma from the 0+ hypothesis. The spin and parity of the observed Higgs boson are consistent with the Standard Model compared to all of the alternative models which have been tested. References (material): ATLAS-CONF-2013-013, ATLAS-CONF-2013-029, ATLAS-CONF-2013-031, CMS-PAS-HIG-13-002, CMS-PAS-HIG-13-003.