

God Particle: “If Universe is the answer what is the question...??”

by Manjil Saikia - Monday, July 09, 2012

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The whole conversation starts with Higgs Boson. If you are from non-physics background then just think it is a hypothetical sub-atomic particle with extremely negligible life span. It exists for a mere fraction of second. The specialty of Higgs boson particle is that it is considered to be the origin of mass in elementary particle. The standard theory of Higgs particle has been regarded as the most simple mechanism for explanation of mass of the fundamental particles.

Why God particle?

This name is given to Higgs boson, because it tells us the origin of all mass in the universe, it does provides the existence of universe and so human beings.

Large Hadron Collider at CERN was mainly designed to identify and characterize this particle. And it took almost 50 years to finalize the result of Higgs mechanism which was stated by Peter Higgs in 1964.

What actually a Higgs Boson is?

In 1964, Peter Higgs, presented three outstanding papers known as Higgs mechanism related to Higgs field and boson. This was the mechanism by which elementary particles were given mass. Higgs mechanism was mathematically so strong that it was confirmed to exist but boson itself at that time was unconfirmed and unobserved. Since, boson is a very massive particle and decays almost immediately when created. Only a very high energetic and advanced laboratory can record it, that's why it took so many years to finalize at LHC in CERN. Higgs Field is defined as the kind of cosmic 'treacle' spread through the universe. According to Prof. Higgs, this field interacts with tiny particles that build up atoms, and weighs them down and give them mass so that they could not move around the universe at the speed of light. Like wise they formed the universe. According to the standard model theory, the world will not be recognizable without it. Without mass, every thing will behave like light, will float freely and will not combine with any thing.

Finding the Higgs boson does not indicate the end of particle physics, instead it will now create huge amount of scope on finding how universe works and what is the mystery behind expanding universe. The new era of particle physics has started now.

Relation of Higgs Boson and Big bang : About 13.7 billion years ago, the big bang gave birth to the universe. During the big bang, there were enormous explosion of massless particles and high energetic radiations. Some scientist stated that a fraction of seconds after the big bang, the radiating energy congealed to Higgs Field. When the universe cooled down, the particles acquired mass from the Higgs

field according to Higgs mechanism and eventually after long duration they form atoms. And LHC is successful in presenting a recreation of atmosphere of billionth of second after big bang.

It is a very good result for hard work of scientist and physicist at CERN, which will now bring a new face to High Energy Physics. And I am sure this is the best gift to Peter Higgs for presenting such a mechanism long years ago. If universe is the answer...then what is the question? It is God Particle.

[This article has been contributed by Rupam Phukan, a 2nd year student of Physics at Gauhati University, India.]

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