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"The God Particle: An Overview"

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ABSTRACT: The god particle is most important particle of universe. It is also known as Higgs bosons. It is discover on 2012 by Peter Higgs. Higgs field give mass to every particle. The boson is a subatomic particle which is named on Satyendra Nath Bose. It is discovered by team of 7000 scientists of different countries by using LHC. L.H .C stands for large hydrogen collider. It is world's largest and most powerful particle accelerator. In this paper we discussed about Higgs bosons and who discovered it. We also mentioned about history of bosons, higgs field etc.

Keywords: GOD particle, Higgs Boson.

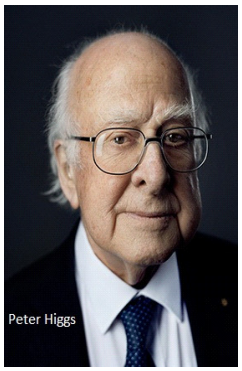
I. INTRODUCTION

The god particle is also known as Higgs Bosons The name of this particle is given on the name of two great scientist Peter Higgs and Satyendra Nath Bose. It is discovered by peter higgs and his team of 7000 scientists approximately forms more than 40 counters on 4th july 2012. It is discovered by using LHC which is placed between two countries France-Switzerland a border near Geneva, Switzerland. It is named as god particle because it gives mass to every particle of our universe.
Peter Higgs is one of six researchers who gave the theory about existence of this particle in 1964. It takes a long time about 48 years to discover this particle after the peter gives the theory.

II. THE BOSON

The boson is a subatomic particle which is named on Satyendra Nath Bose. The fermions and bosons are distinguished by subatomic spin. The unit of spin is plank constant. Bosons have a spin of integral multiple of plank constant. But Fermions have half of spins like ½, 3/2, 5/2,……


Satyendra Nath Bose



Bosons have symmetric spin but Fermions have anti-symmetric spin. Photon, Gluons, W & Z bosons which have 1 spin, Higgs bosons have 0 spin and graviton has 2 spin they all are the bosons. Fermions are Quarks and Lepton both has ½ spin. Two Bosons can be placed in same place in same time but fermions cannot be present in same place in same time.

III. HIGGS BOSONS

Higgs boson is a subatomic particle which is responsible for mass in every particle of universe. Higgs boson has zero spin. The single unit particle of Higgs field is known as Higgs boson. It is discovered by team of scientists of different countries by using LHC. The LHC is located in between two countries France-Switzerland a border near Geneva, Switzerland. It is discovered in 4th July 2012. It is also known as GOD PARTICLE. The Higgs boson has 125 GeV (mass).

IV. HIGGS FIELD

It is a energy field which is present in whole universe. The unit particle of this field is known as higgs boson. This field gives mass to every particle. The particle get more interact with higgs field to get more mass.

Table : 1 Mass of Particles.

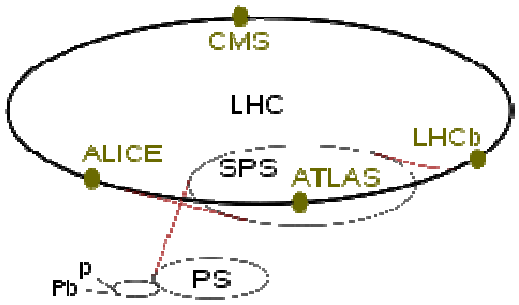
Particle	Mass(GeV)
Photon, Gloons	Zero
Neutrinos	Very small
Electron	0.0005
Muon	0.108
Tau	1.777
Up quark	0.002
Down quark	0.005
Strange quark	0.100

Charm quark	1.20
Bottom quark	4.20
Top quark	172
W boson	80.3
Z boson	91.2
Higgs boson	125

V. L.H.C.

L.H.C. stands for large hydrogen collider. It is world's largest and most powerful particle accelerator machine. It was first started on 10 September 2008. The L.H.C. is a 27 kilometer long ring of semiconducting materials. In L.H.C. two high energy particles are travelling inside the accelerator with high speed of light in opposite direction.

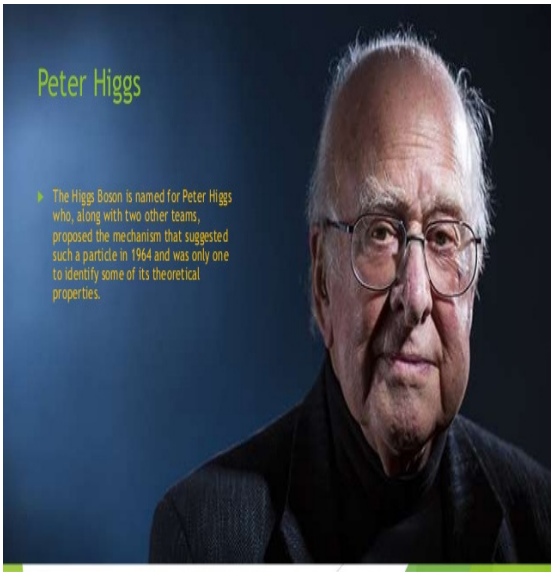
The L.H.C. is Located in Europe, near Geneva, Switzerland and France. More than 7000 scientists are working at this research center .Just priority of collision type of magnet is called Squeeze .The L.H.C. has two general process that are collectors, i.e, ATLAS, CMS. More than 3000 scientists from 174 Institutes in 38 countries are working on the ATLAS experiment. The ATLAS is 46 meter long 25 feet high and 25 meter width and 7000 tones detector. It is situated 100m below the ground.



The CMS(Compact Muon Solenoid) have 14000 tonnes weight . It is also placed underground near the Cessy in france.The complete detector is 21 metre long 15 metre wide and 15 metre high.The CMS experiment is one of the largest international scientific collaboration in history.The 4300 particle physicists, engineer, technicians, students from 182 institutes in 42 countries work in CMS.

VI. PETER HIGGS

Peter Ware Higgs was born on 29 May 1929 at Newcastle upon Tyne in England. In the 1960s, he proposed broken symmetry in electroweak theory .On 8 October 2013 Peter Higgs and François Englert were honored by Nobel Prize in Physics for discovery of Higgs Bosons. Peter Higgs was also awarded by the Wolf Prize in Physics in 2004.



VII. HISTORY

In 1995 the scientist found the top quark by using its Tevatron particle accelerator at around 176 Giga-electron-volts (GeV) .

After Five years looking for a Higgs with a mass of around 80 GeV before closing in 2000. After that on 2008 One billion people watch as proton beams circulate the Large Hydrogen Collider for the first time.

2012

In February, the LHC boosts collision energy from 7 to 8 tetra-electron-volts (TeV).

4 July

The Higgs Boson is discovered in Wednesday 4th july 2012.

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