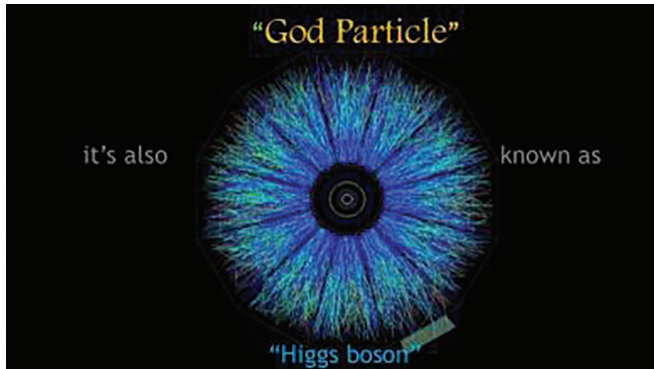
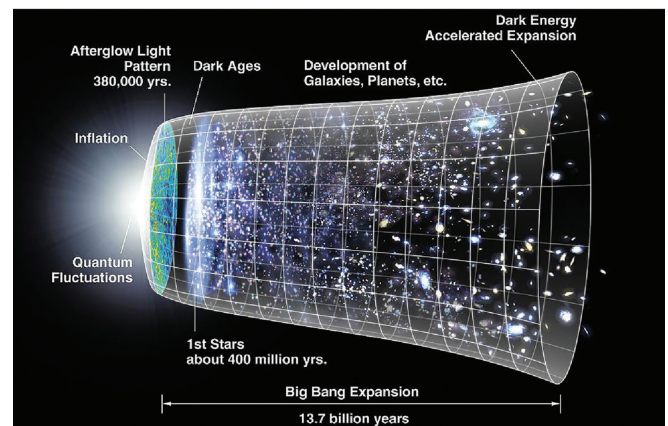
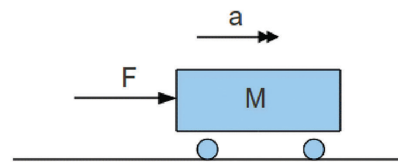


OVERVIEW OF HIGGS BOSON

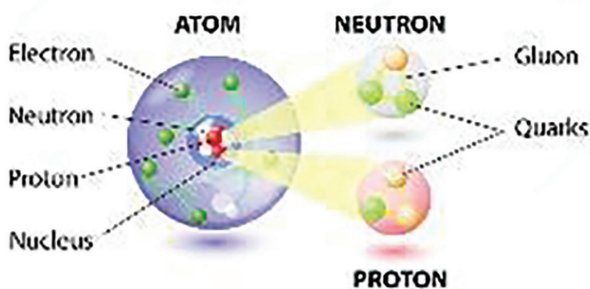


Not every particle is known as GOD Particle and this Higgs Boson is called the GOD Particle for a reason. Why people believe that, every mass came from The BIG BANG? BIG BANG theory states that the existence started from a single highly concentrated cloud burst and hence existence was tracked down to 13.8 billion years old.

that ($F=ma$) where, 'a' could be considered the resistance or acceleration. But none knows the actual existence of the mass. Mass is nothing but how heavy something is without gravity. Mass of any object is constant throughout the universe. Anything which occupies space and has mass is called matter and matter comprises mainly of electrons, protons and neutrons. Further they are also classified into quarks and leptons.



HIGGS BOSON



Whenever we talk about mass, it's the newton's laws that comes to our mind which simply states

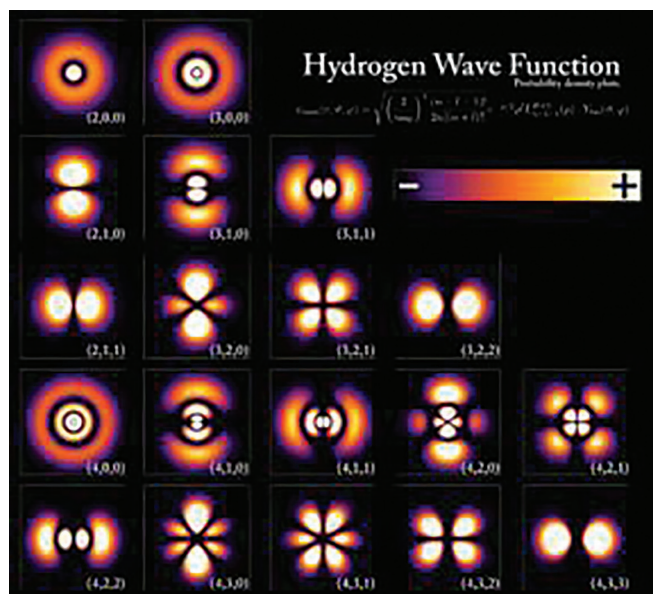
But the main question that comes to our mind is that, from where do these particles acquire mass and why electron has mass and proton does not? All the questions are answered by boson theory. It all started in 1964 when Peter Higgs who was among the six physicists who proposed the existence of HIGGS BOSON (named Higgs Boson afterwards). This proposal was made through publishing of their work in a PRL Symmetry Breaking Papers 1964.

But this theory accepted as it was merely a prediction and was based on all MATHEMATICAL proofs but no physical or researched answer. No

doubt all the Mathematical calculations done by them were right but any hard proof to prove the theory. Not only mathematical proofs but the apparatus required to prove the theory was unavailable.



2010 Sakurai Prize Winners - (L to R) Kibble, Guralnik, Hagen, Englert, and Brout But the good thing is that maybe it took a lot time than other discoveries but it was worth the time spent in order to study QUANTUM PHYSICS in deep and uncage the unknown mysteries. QUANTUM PHYSICS is a part of physics where the smallest of smallest particle is studied (SUBATOMIC particles) thoroughly.

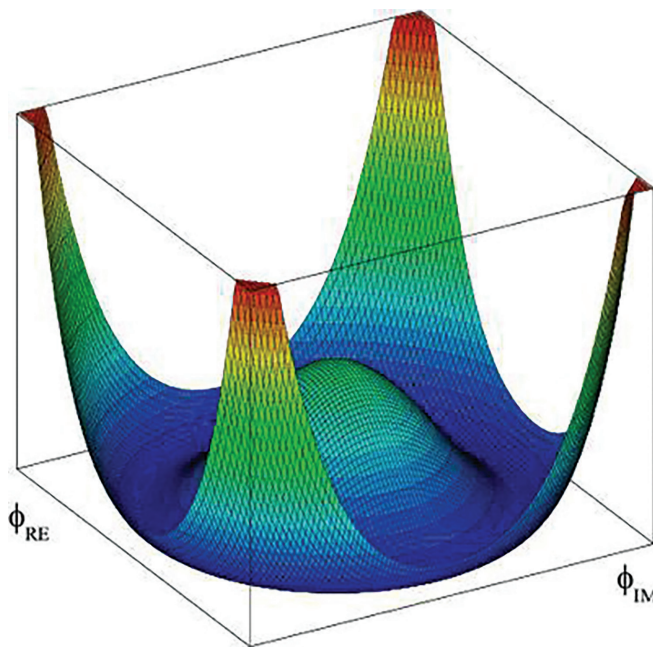


The main question here is that, what was predicted that people accept? The answer to it lies in what Peter Higgs actually proposed. Peter Higgs told that there exists a HIGGS FIELD (by WIKIPEDIA

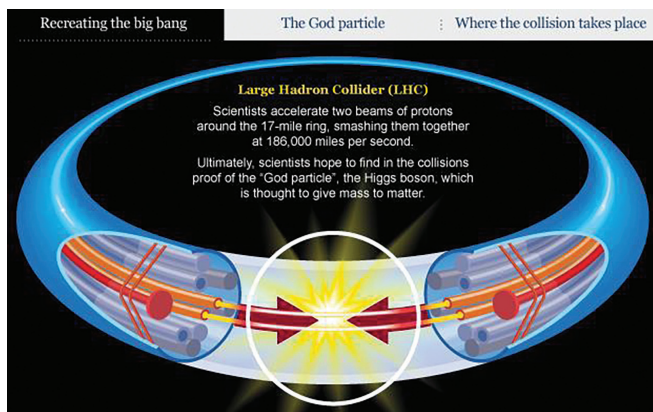
known as problem in PARTICLE PHYSICS and the last unverified part of standard model of Particle Physics) and due to which each and every object in this universe attains its mass.

And there exists a HIGGS BOSON which has ZERO SPIN and is MASSLESS which was simply not acknowledged by people as this thing just denied the very fundamental meaning of the PARTICLE, which states that anything having mass is known as a particle. PARTICLE PHYSICS is a branch in Physics which studies the nature of Particle and Radiations. *HIGGS FIELD is a field that exists throughout the space.

It acts like a resistance field and it is the field which gives mass to a particle, hence if a particle passes through it with speed of light then it is considered massless. While others having masses slowdown in this field as they interact with the different layers of this HIGGS FIELD. Mexican Hat Potential This behavior of Higgs Field is often explained with the help of an example known as COCKTAIL PARTY.

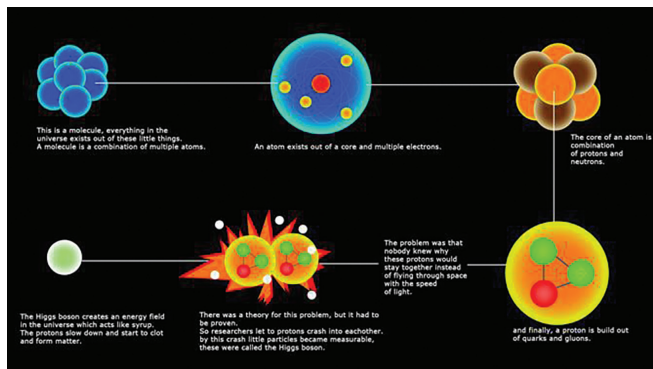


COCKTAIL PARTY suggests that if in a party comprising of all the researchers of Particle Physics then if a less known common person passes through the crowd then he will reach to the main hall easily as no one would be able to interact with him as he is not well known among



them, BUT similarly, if PETER HIGGS enter the party then people would talk to him and ask numerous questions i.e. interact to him which will make his reach to the main hall late as his speed is slowed.

And hence by similar means the particles in HIGGS FIELD attains mass. This was all about what was proposed and what took it so long to get verified. But now the important thing is that where and what happened after 50 years that the proposal was considered legit with actual proof? To prove the legitimacy of the HIGGS BOSON it was obvious that a large set up would be needed with high end equipment.



First the research was carried out in FERMILAB (place ILLINOIS) but afterwards as it needed more time and investments the project was shifted to a well-known lab of CERN (European Organization for Nuclear Research).

The results to it can be considered true only if the behavior of Coin is observed after flipping it for over a Million times. Similarly, to prove the existence of HIGGS BOSON it needed Million times TRILLION efforts as it is said to exist in a TRILLIONth collision

of two particles. So, it took them 50 years for the development of the Research Lab and Collision of particle and they finally observed that one in a Trillion collision of particle on 4th JULY 2012, HIGGS BOSON can be observed and without it there is no ME or the WORLD itself as there would be nothing to bind themselves to each other particle.



For this HIGGS BOSON in 2013 Peter Higgs and François Englert got NOBEL PRIZE and there was one more Co-Researcher of François Englert, Robert Brout who was nominated to get Nobel Prize for this but due to his death before few months of awarded. This was huge success in the field of Particle Physics as well as Quantum Physics.

HIGGS BOSON is indeed a GOD Particle having extraordinary properties and explanations of ZERO SPIN and MASSLESS particle making our vision wide even to think of the unexpected in the near future.

Each and every space in universe consists of the Bosonic Field and every particle moving at a speed less than the speed of light in that field has mass and having mass can also give advantage that we can travel at whatever speed we need to. And HIGGS BOSON is the only Massless Particle with Zero Spin and is found in a Trillionth collision of particles in LHC

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