

THE BIG 5Qs

1 WHAT'S THE HIGGS BOSON PARTICLE?

The universe is made of 12 fundamental particles and 4 fundamental forces. This is called the Standard Model of physics. One more particle was predicted by three scientists: Higgs, Brout and Englert in 1964. It explained the most important property of all matter – mass, and was called the Higgs boson (bosons are force-carrying particles named after Indian scientist S N Bose). The Higgs boson was experimentally confirmed on Wednesday

dicted by three scientists: Higgs, Brout and Englert in 1964. It explained the most important property of all matter – mass, and was called the Higgs boson (bosons are force-carrying particles named after Indian scientist S N Bose). The Higgs boson was experimentally confirmed on Wednesday

2 HOW DID HIGGS BOSON GET TO BE CALLED THE 'GOD PARTICLE'?

Nobel winning physicist Leon Lederman unwittingly coined it. He wanted to refer to the Higgs boson as the 'goddamn particle' but his editor didn't allow that. Higgs has distanced himself from the name saying: "I find it embarrassing. Although I'm not a believer, it is the kind of misuse of terminology that may offend some"

3 HOW DID THE LARGE HADRON COLLIDER (LHC) FIND IT?

Higgs boson is supposed to have originated a trillionth of a second after the Big Bang created the universe. Scientists tried to recreate the same conditions presumed to have existed then by making very high-speed protons collide with each other inside the LHC. Tracking millions of collisions occurring in seconds, they identified traces of a never-before-seen particle. Its mass is in the same range as predicted by theory: it is almost certain this is the Higgs boson

4 WHY CAN'T SCIENTISTS CONFIRM THE DISCOVERY WITH CERTAINTY?

They are being rigorous – as scientists should be. They say on one count they've found a particle that fits the predicted Higgs boson range of mass. But they have yet to completely identify its other properties. They've to explain all current observations, including the slightly higher than expected energy and absence of some other particles. That will take time. However, for all practical purposes it is the Higgs boson

The pioneer whose quest began in 1964

Forty-eight years ago, British scientist Peter Higgs had a eureka moment when he realised there could be a particle that confers mass, one of physics' greatest puzzles.

"He said: 'Oh shit, I know how to do that!'" former colleague Alan Walker said of the breakthrough as recounted to him by Higgs, now 83. Shy and unassuming, Higgs lives in Edinburgh, and was present in Geneva on Wednesday during the announcement of the discovery of a subatomic parti-



“
I NEVER

and finally carried by the US journal Physical Review Letters.

Born in Newcastle upon Tyne, England, Higgs holds a PhD from King's College. "He is mild-mannered but gets a little tenacious if you say something wrong that (has to do with) physics," said Walker. He also has several honorary degrees and has been mentioned as a possible Nobel contender.

A modest man, Higgs is said to have cringed every time the term "Higgs boson" was used in his presence and studiously avoid-

God! Why did world forget Boson's father?

Arun Ram | TNN

Chennai: As Cern scientists pop the champagne in celebration of finding the Higgs boson, an Indian scientist after whom the God particle is named remains in virtual oblivion.

Media reports are replete with references to Peter Higgs, the British physicist who predicted the existence of such a particle in the early 1960s. But, that a boson – one of the two fundamental classes of subatomic particles – is

a Nobel Prize which he never got. But his work on quantum mechanics was so substantial that they named one of the subatomic particles after him. However, when science's biggest find came, Bose was missing from the limelight, even in India. "I believe it is a deliberate omission," says P M Bhargava, founder director of the Centre for Cellular and Molecular Biology. "This is not the only such case." Top Indian scientists like Bhargava feel that it reflects a general lack of recognition for Indian sci-



entific research. "This is not the only such case." Top Indian scientists like Bhargava feel that it reflects a general lack of recognition for Indian sci-

5 SO, WHAT DOES IT MEAN FOR SCIENCE?

The discovery confirms the Standard Model theory is valid. Other particles predicted by this theory have been confirmed, but the missing Higgs boson was a glaring hole. Now that's closed. But there are other aspects of sub-atomic physics and of the cosmos that are unexplained, like dark matter (which makes up 25% of the matter in the universe but has never been seen), dark energy (which makes up 70% of matter in the universe but also has never been located), antimatter, supersymmetry (a