

'It's a big day for science and the quantum field theory'

Brian P Schmidt shared the 2011 Nobel prize in physics for discovering that the universe's rate of expansion, far from slowing down millions of years after the Big Bang, is actually accelerating. Now, as the European Organisation for Nuclear Research (Cern) announced it could have found the 'God particle' - one of the basic building blocks of matter in the universe - Schmidt spoke with Narayani Ganesh about this discovery, its implications for understanding the nature of space - and the challenges in tracing our roots back as we accelerate forward:

■ Could you explain Cern's announcement that they've found a Higgs-like particle?

The Higgs boson particle, proposed by Peter Higgs more than 40 years ago, is expected to clarify how the universe gets its mass - else, it would have

remained as a primordial soup. The news certainly indicates they've discovered something. It is consistent with the Higgs model but we need to see because Cern also said it would take another three years to carry out measurements and research to confirm the nature of the particle.

I would say it's a big day for science and for the underpinnings of the quantum field theory.

Q&A ■ Will this discovery help us understand what dark matter is?

It's way too early to tell...I'd say at this point we've seen the 'bump' but we don't know its properties yet. We could know that only after measurements are complete...we might say it is consistent with Higgs - but it may or may not be Higgs.

■ What does this discovery mean for the standard model



of the universe you have worked on?

It is essentially consistent with the standard model, so it's really telling us the standard model is more or less correct but not necessarily complete. It shows once again that physics can say pretty amazing things...

■ Martinus Veltman, the 1999 physics Nobel laureate,

says this discovery is like closing the door on the standard model - is any more information needed to complete this now?

Well, it would be nice to understand the acceleration of the universe. Closing the door means it's now a nice, neat little package but it does not mean it is complete - we still have to deal with dark matter that constitutes more than 95% of the universe.

It would be really nice if with better measurements of the newly discovered particle, we get an insight into where to look next for dark matter - we need to remember that what might explain dark matter wouldn't be a Higgs particle but could be something related to supersymmetry. We haven't seen supersymmetry yet - but it might show up in the future...we have some huge questions out there. So,

I'd say Cern's announcement is moderately interesting.

■ Meanwhile, you've also noted we're losing information as the universe continues accelerating - could you elaborate on that?

Since the universe is expanding like a balloon and everything in it is moving apart, we are losing information because we will no longer be able to see what we are able to see now, with telescopes and other instruments.

Our solar system might remain as it is because of gravity - however, all other bodies like galaxies would be flung farther away. We would not be able to see what we're able to see today...it takes a great deal of time for information to get to us across all those light years - if we are accelerating and also moving apart, we are going to see less of how the universe began in the first place.