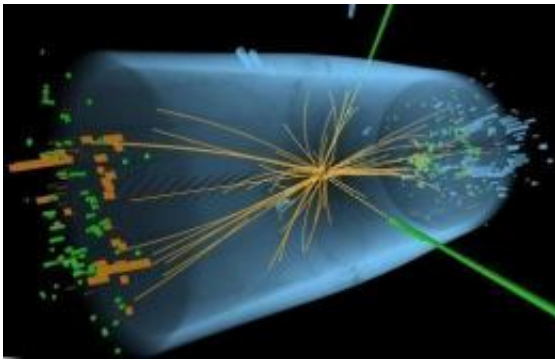


# 'God particle' a gateway to new vision of universe

July 5 2012, by Amy Coopes

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A graphic from the European Organization for Nuclear Research (CERN) in Geneva shows a proton-proton collision event measured in the Compact Muon Solenoid (CMS) experiment in the search for the Higgs boson. Physicists said Thursday the potential discovery of the "God particle" was a gateway to a new era that could see humanity unlock some of the universe's great mysteries including dark matter.

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The European Organisation for [Nuclear Research](#) (CERN) unveiled data from the [Large Hadron Collider](#) on Wednesday "consistent with the long-sought Higgs boson", an [elusive particle](#) thought to help explain why matter has mass.

It was hailed as a huge moment for science by physicists gathered in Australia, where CERN's findings were unveiled via videolink from Geneva at a landmark conference attended by hundreds of the field's top experts.

Scientists went into a frenzy following the announcement, speculating that it could one day make [light speed](#) travel possible by "un-massing" objects or allow huge items to be launched into space by "switching off" the Higgs.

CERN scientist Albert de Roeck likened it to the discovery of electricity, when he said humanity could never have imagined its future applications.

"What's really important for the Higgs is that it explains how the world could be the way that it is in the first millionth of a second in the Big Bang," de Roeck told AFP.

"Can we apply it to something? At this moment my imagination is too small to do that."

Physicist Ray Volkas said "almost everybody" was hoping that, rather than fitting the so-called Standard Model of physics -- a theory explaining how particles fit together in the Universe -- the [Higgs boson](#) would prove to be "something a bit different".

"If that was the case that would point to all sorts of new physics, physics that might have something to do with dark matter," he said, referring to the hypothetical invisible matter thought to make up much of the universe.



British physicist Peter Higgs smiles at a press conference on July 4, at the European Organization for Nuclear Research (CERN) offices in Meyrin near Geneva. After a quest spanning nearly half a century, physicists said on July 4 they had found a new sub-atomic particle consistent with the Higgs boson which is believed to confer mass.

"It could be, for example, that the [Higgs particle](#) acts as a bridge between ordinary matter, which makes up atoms, and dark matter, which we know is a very important component of the universe."

"That would have really fantastic implications for understanding all of the matter in the universe, not just ordinary atoms," he added.

De Roeck said scrutinising the new particle and determining whether it supported something other than the Standard Model would be the next step for CERN scientists.

Clarification could be expected by the beginning of 2013; definitive proof that it fitted the Standard Model could take until 2015 when the LHC had more power and could harvest more data.

The LHC is due to go offline for a two-year refit in December that will see its firepower doubled to 14 trillion electronvolts -- a huge step

forward in the search for new particles and clues about what holds them all together.

De Roeck said he would find it a "little boring at the end if it turns out that this is just the [Standard Model](#) Higgs".

Instead, he was hoping it would be a "gateway or a portal to [new physics](#), to new theories which are actually running nature" such as supersymmetry, which hypothesises that there are five different Higgs particles governing mass.

The hunt for Higgs -- the logical next step of which de Roeck said would be searching for, and eventually being able to produce, [dark matter](#) particles -- has already had huge benefits to medicine and technology.

Volkas said the Internet was born at [CERN](#) as a solution to high-volume data-sharing and other major spin-offs were likely to follow as physicists continued to "push the boundaries of pure science".



Participants take a rest early on July 4, before the opening of a seminar on the latest update in the 50-year search for the Higgs boson particle at the European Organization for Nuclear Research (CERN) near Geneva. Physicists said Thursday the potential discovery of the "God particle" was a gateway to a new

era that could see humanity unlock some of the universe's great mysteries

"We just want to know how the world works, but in order to answer those questions you have to develop new technologies," he said.

Funding for particle physics is already under scrutiny in North America, where the LHC's predecessor, the Illinois-based Tevatron run by Fermilab, was closed late last year due to financial constraints.

Fermilab director Pier Oddone said money was a "big, big issue" threatening progress in the United States and he hoped the Higgs discovery would spur greater funding from US agencies and Congress.

"What I would hope is that this excitement, this focus of the world's attention on this discovery, will actually help a lot in stimulating and reestablishing particle physics in North America," Oddone said.

De Roeck said there were similar problems in Europe, where physicists will meet in September to discuss research priorities for the next 20 years and whether they need and can afford an accelerator after the LHC.

"That is going to be a tough fight," he said. "Despite this momentous moment we have now, it doesn't necessarily bring the funding which one would require."

He urged governments and other key contributors to see fundamental science as a "must" rather than a luxury.

"This is the only way we can actually move on and have a deeper understanding of how things work. It can only be in our benefit

exploring that."

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