

Large Hadron Collider smashes another record

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European Organization for Nuclear Research (CERN) scientists look at computer screens showing traces on the Atlas experiment of the first protons injected in the Large Hadron Collider (LHC) during its switch-on operation in 2008 near Geneva. It set a new record early Monday, a feat that should accelerate the quest to pinpoint the elusive particle known as the Higgs Boson.

The world's biggest particle collider set a new record early Monday, a feat that should accelerate the quest to pinpoint the elusive particle known as the Higgs Boson, a senior physicist said.

"Last night, a symbolic frontier was crossed," said Michel Spiro, president of the board of the European Organisation for [Nuclear Research](#) ([CERN](#)), explaining that the rate of sub-atomic smashups in its vast machine had multiplied 10-fold in the space of a month.

CERN's Large Hadron Collider (LHC) is housed in a 27-kilometre (16.9-mile) ring-shaped tunnel 100 metres (325 feet) below ground, straddling the French-Swiss border.

It is designed to accelerate beams of [protons](#) to nearly the [speed of light](#) in contra-rotating directions.

Then, using magnets, the beams are then directed into labs where some of the protons collide while others escape.

Detectors record the seething sub-atomic debris, hoping to find traces of particles that can strengthen fundamental understanding of physics.

A month ago, the LHC set a record of 10 million collisions per second.



The director general of the European Organization for Nuclear Research (CERN), Rolf-Dieter Heuer, speaks to journalists in May 2011. CERN runs the world's biggest particle collider, located on the outskirts of Geneva. It set a new record, a feat that should accelerate the quest to pinpoint the elusive particle known as the Higgs Boson, a senior physicist said.

"This is now 100 million collisions per second," Spiro said at a

conference in Paris on the "infinitely small and the infinitely big."

Among the puzzles that physicists are seeking to answer is the existence of the Higgs, which has been dubbed "the [God particle](#)" for being mysterious yet ubiquitous.

If found, it would explain the nature of mass, filling a major piece of the theoretical construct of physics known as the [Standard Model](#).

In London last week, CERN physicists said they believed that by the end of 2012 they could determine once and for all whether the Higgs existed or not.

Spiro said that this search would certainly be helped by the stepped-up pace of collision, which is the equivalent to sifting more earth in search of nuggets of gold.

"If we're lucky, and it (the Higgs) is in the right zone for expected mass, we may be able to find it this summer," he said. "On the other hand, ruling it out will take us to the end of next year."

To provide a confirmation would require notching up "at least 15" detections, he said.

The first proton collisions at the [LHC](#) occurred on September 10, 2008. The smasher then had to endure a 14-month shutdown to fix technical problems.

It had been due to shut down in early 2012 for work enabling it to crank up to full power. But a decision was made several weeks ago to delay closure for a year to help the Higgs hunt.

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