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LHC speeds towards collisions

Nov 23, 2009 [7 comments](#)**Cheers all round** CERN workers celebrate on Friday

CERN has confirmed the first simultaneous acceleration of two separate proton beams around the Large Hadron Collider (LHC).

Occurring just after noon today (Central European Time), the result marks another important step in the restart of the collider, which was forced to shut down 14 months ago following a catastrophic liquid helium leak.

We are at the end of 20 years of effort from the international scientific community," says Fabiola Gianotti, the Italian particle physicist in charge of ATLAS, one of the two main detectors at the LHC. "This is the beginning of a fantastic new era of physics, which we hope will change the physics textbooks."

Swift progress

The news follows the announcement on Friday that CERN had successfully circulated individual proton beams around separate rings of the LHC's 27 km tunnel.

Further progress followed on Saturday when CERN engineers were able to "capture" the beams using a radio frequency (RF) system, meaning that protons are circulating in coherent bunches rather than spreading out around the ring.

In today's breakthrough, both beams were powered up at the same time with one being circulated clockwise and the other anticlockwise.

"Thanks to the tireless work of our engineers, we are progressing faster than we could have hoped for on Saturday," says Archana Sharma, a scientist on the Compact Muon Solenoid (CMS) experiment, the other major detector at the LHC.

Sharma told *physicsworld.com* that the mood at the particle physics laboratory is one of great optimism but people are saving the real celebrations until the first collision of the beams.

Like a new car

The first low energy collisions at 1.2 TeV per beam are expected within the next two weeks with the beam energy being gradually raised to 3.5 TeV per beam by the beginning of next year.

Rolf-Dieter Heuer, the director general at CERN regards it as a "great achievement" to have made such quick progress, but he is quick to

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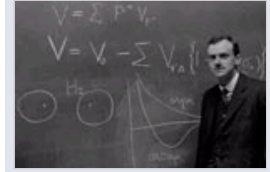
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state that the facility will maintain a cautious approach to the LHC's restart. "I use the analogy of a new car – you would never dream of accelerating a new vehicle to its maximum power upon its first use," says .

The CERN boss was speaking as part of a live web-broadcast today in which he entertained viewers by acting out the LHC's antiparallel beamlines through a series of hand gestures.

"We need to get confidence in the machine before we can start to open new windows in physics," he says.

About the author

James Dacey is a reporter for *physicsworld.com*

7 comments

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1

Oliver K. Manuel

Nov 23, 2009 7:48 PM
United States

Congratulations!

I wish you success.

Future funding for physics is at stake.

With kind regards,
Oliver K. Manuel

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2

dlau

Nov 23, 2009 9:51 PM
United States

LHC RESTART

I am glad to know that LHC is running again and made such fast progress and I knew it would happen for I have confidence and the utmost respect of those scientists working at CERN regardless of what others might think. We now understand the collider much better than a year ago and we learned from experience. This is a complex machine and things happen, but we get better at it as time progresses. Afterall, science is about making progress and we are doing it. Now hope that we can run it at higher energy and making sure everything is working properly. I understand that there are more repairs on the way to making sure that problems will not reoccur before running it at the highest energy of 7 TEV. This is what science is about and I am eager in awaiting for some major scientific discoveries within the next 2 years. Who knows what we will find first, but LHC will shed lights on new physics. This is what research is about. Good work, CERN.

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3

Oliver K. Manuel

Nov 24, 2009 2:35 PM
United States

Really?

Quote:

Originally posted by dlau

Who knows what we will find first, but LHC will shed lights on new physics.

That is an interesting point of view.

With kind regards,
Oliver K. Manuel

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4

dlau

Nov 25, 2009 6:45 AM
United States

Quote:

Originally posted by Oliver K. Manuel

Quote:

Originally posted by dlau

Who knows what we will find first, but LHC will shed lights on new physics.

That is an interesting point of view.

With kind regards,
Oliver K. Manuel

It really is for I appreciate the long hard work they put in and the first collision that happened earlier is a milestone for them.

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5

Oliver K. Manuel

Nov 25, 2009 3:36 PM
United States

Quote:

Originally posted by dlau

It really is for I appreciate the long hard work they put in and the first collision that happened earlier is a milestone for them.

I also appreciate their hard work.

But I doubt if anything of value will come from all their efforts.

I do wish them well. They have spent a large sum of public funds on an ill-advised study, and future funding for physics is in the balance.

The most foolish thing they could do next would be for all of them to agree on reporting a major recovery that later turns out to be wrong - like the 2001 report by 178 scientists from the Sudbury Neutrino Observatory that solar neutrinos oscillate away and the "Solar Neutrino Puzzle" was solved!

With kind regards,
Oliver K. Manuel

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6

Drlove

Nov 25, 2009 9:31 PM
solvang, United States

Quote:

*Originally posted by **Oliver K. Manuel***

Quote:

*Originally posted by **dlau***

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With kind regards,
Oliver K. Manuel

Dare to dream my friend.

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Oliver K. Manuel

Nov 26, 2009 5:32 AM
United States

Correction: Don't Report Questionable Discovery!

The most foolish thing they could do next would be for all of them to agree on reporting a major discovery that later turns out to be wrong - like the 2001 report by 178 scientists from the Sudbury Neutrino Observatory that solar neutrinos oscillate away and the "Solar Neutrino Puzzle" was solved!

With kind regards,
Oliver K. Manuel

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