LHC reaches 2017 targets ahead of schedule

October 31 2017

Trillions of protons race around the LHC's 27km ring in opposite directions more than 11,000 times a second, travelling at 99.9999991 per cent the speed of light. Credit: Max Brice and Julien Ordan/CERN

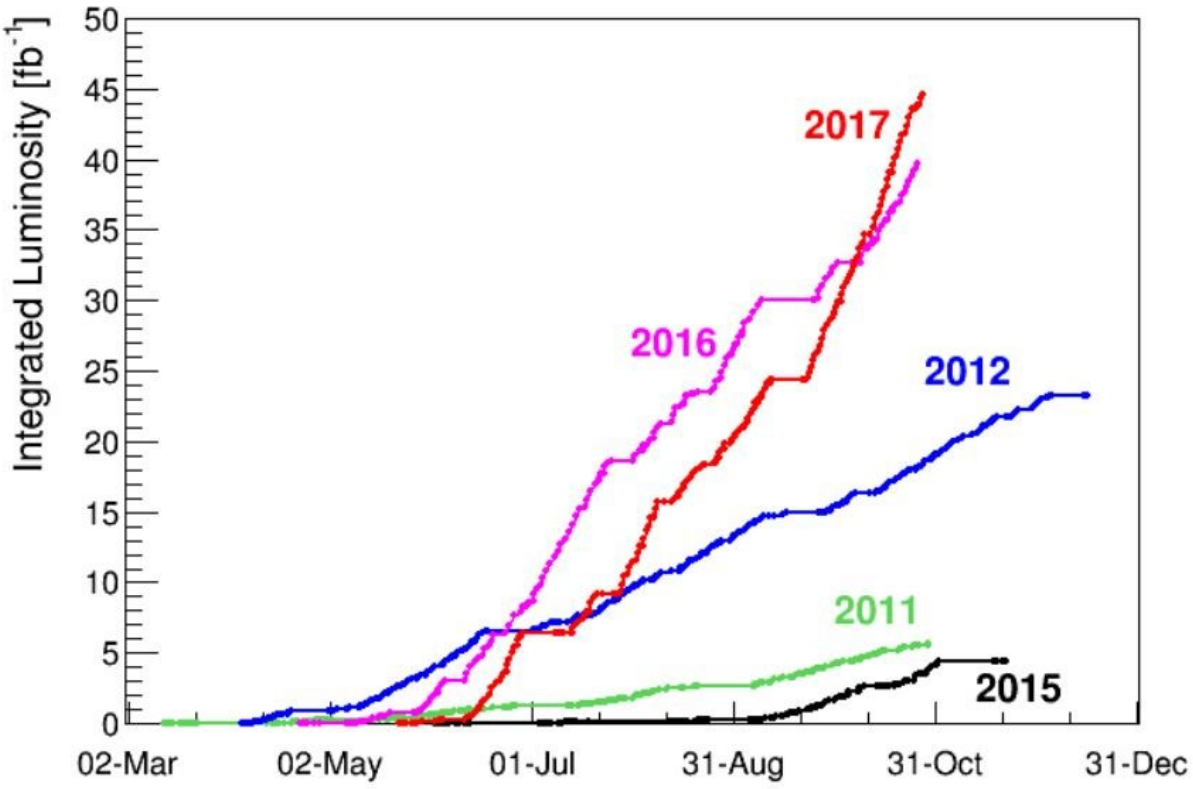
Today, CERN Control Centre operators announced good news, the Large Hadron Collider (LHC) has successfully met its production target for 2017, delivering more than 45 inverse femtobarns to the

experiments.

This achievement was all the more impressive as it was ahead of schedule. The LHC still has 19 more days of proton collisions, continuing to provide physics data to the experiments. Yet earlier this year it looked unlikely that this target would be achieved. An issue had developed with a small group of magnets known as 16L2 that was affecting machine performance. Then, early September, thanks to effective and creative collaboration between different teams around CERN, alternative ways to deal with the technical issue were developed that made the LHC and its injector chain reach top performances again. In addition, by the end of September, the 2017 production run was shortened by advancing special runs planned for 2018 to 2017, putting yet more pressure on the operators to deliver in a smaller timeframe.

Nonetheless, with the target met, as well as another recent milestone of reaching twice the design luminosity, the LHC has once again shown its excellence. That being said, physicists are already looking to upgrades tens of years in the future and the physics potential that they bring. Today at CERN, scientists are gathering to begin a three-day workshop to review, extend and further refine understanding of the physics potential of the High Luminosity LHC – the planned upgrade of the LHC – and even beyond.

In the more immediate future, once the main proton physics run end this year, the LHC will have 15 days of special runs plus machine development before its winter shutdown begins on 11 December. At that point, the "Year-end technical stop" (YETS) will be used to help consolidate and improve the machine, ahead of its restart in spring 2018.



The LHC has outperformed its target for 2017, delivering more collisions than expected to LHC experiments. Credit: CERN

Provided by CERN

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