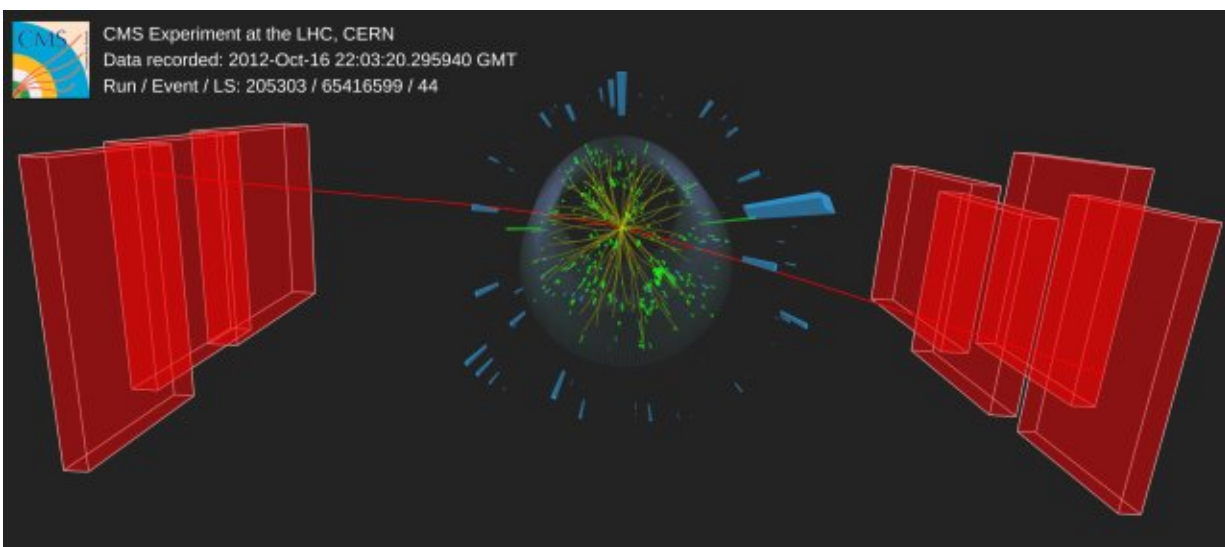


# CMS completes release of its entire Run 1 proton-proton data

December 14 2022

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A collision event recorded by CMS in 2012, available in the latest release of CMS open data. Credit: CERN

The CMS experiment is one of the largest international scientific collaborations in history, with a broad program of activities at the forefront of particle physics research. As of December 5, 2022, all of the proton-proton data collected by CMS during Run 1 of the Large Hadron Collider (LHC) is now available through the CERN Open Data Portal. This completes the process that started in 2014 with the experiment's very first open data release in experimental particle physics.

Completing the delivery of its Run 1 data within 10 years reaffirms the CMS collaboration's commitment to an open data policy. This policy embodies values laid down in the CERN Convention, which states that all research undertaken at the Laboratory must be open and available to everyone.

The newly released CMS data consists of 42 collision datasets, representing a total of 491 terabytes, taken in early and late 2012 towards the end of LHC Run 1. This data includes some of the original findings from CMS that were used to confirm the existence of the Higgs boson, which earned François Englert and Peter Higgs the 2013 Nobel Prize in Physics.

Included in the release are examples of code used to extract [physics](#). This software has been successfully used to demonstrate the intricacies of experimental particle data taking in the CMS Open Data workshops held over the last three years. In addition, the CMS Open Data guide covers details of how physics objects can be accessed using this software, giving users the possibility to expand on this sample code for studies of their own interest.

Adaptable software samples are one of the most efficient ways of passing on the knowledge needed for research on the CMS data. "The [software](#) included in this release helps us preserve the huge efforts of the CMS Run 1 data analysts," says Julie Hogan, one of the key contributors to the CMS Open Data workshops.

"The code samples are essential ingredients for any serious effort to use this data for research," adds Edgar Carrera, the lead organizer of the latest workshops. "We therefore do our best to allow users of the data to follow the original CMS procedures as closely as possible."

The preparations for the next CMS data releases are under way. The

collaboration looks forward to providing additional heavy-ion [open data](#) from Run 1 and to proceeding with further Run-2 releases.

**More information:** [CERN open data portal](#)

Provided by CERN

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