



Contribution ID: 16

Type: **Presentazione orale**

## The LHCb Event Builder: an update

*Monday, 23 May 2022 15:40 (20 minutes)*

The LHCb experiment will face an unprecedented amount of data in LHC Run3 starting in 2022. We expect more than 30 Tbit/s of data from the detector into the event-builder, 100GB/s to the first Buffer Storage and 10GB/s to the second Buffer Storage with a software defined High Level Trigger performed on ~170 GPGPU at first stage and ~4000 CPU nodes for the second one.

After an intense R&D phase we have decided on the details of the architecture, and we have procured all the hardware.

In Terms of amount of data to handle this will be the biggest scientific data-acquisition system built to date. While the technology to build even bigger systems is clearly available, building a compact system at this size with a limited budget poses some interesting challenges. In our system we have tried to minimize the number of custom-made components to take advantage of technological development in industry, but our use-case for these components remains quite special.

Particularly interesting is not only the new DAQ design of the Experiment itself but also the ICT infrastructure needed to achieve it: a new 4 MW Data-Center built from scratch with the latest free-cooling technologies.

In this paper we review the design, the reasons which brought us to it and the measurements of the commissioning of our system.

**Primary author:** SBORZACCHI, Francesco (LNF)

**Presenter:** SBORZACCHI, Francesco (LNF)

**Session Classification:** Esperimenti e calcolo teorico

**Track Classification:** Calcolo negli esperimenti