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## Quality assurance of the LHCb simulation

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Monte Carlo simulation is a vital tool for all physics programmes of particle physics experiments. Their accuracy and reliability in reproducing detector response is of the utmost importance. For the LHCb experiment, which is embarking on a new data-take era with an upgraded detector, a full suite of verifications has been put in place for its simulation software to ensure the quality of the samples produced. The chain of tests exploits the LHCb infrastructure for software quality control.

In this contribution we will describe the procedure and the tests that have been put in place. First-level verifications are performed as soon as new software is submitted for integration in the LHCb GitLab repository. They range from Continuous Integration (CI) tests to, so called, 'nightlies': short jobs run overnight to verify the integrity of the software. More in-depth performance and regression tests are carried with dedicated infrastructure (LHCbPR), which compares samples of  $O(1000)$  events. Simulation data quality shifters look for anomalies and alert the authors in the case of unexpected changes. Work is also in progress to enable the automatic verification of important variable distributions from a small number of simulated events before the whole production is launched.

### Significance

Announcement of newly developed automatic quality assurance tools

### References

### Experiment context, if any

LHCb

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