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DQM4HEP: A generic Data Quality Monitoring for High Energy Physics

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Online Data Quality Monitoring (DQM) is a central tool for the good operation of High Energy Physics experiments. Most of these experiments develop their own DQM solutions on top of the Event Data Model (EDM) specific to their detector. This leads to a strong dependency on the data format and make the reusability of the DQM tools for other detectors difficult.

We developed a generic online monitoring framework, independent of the EDM and data type, called DQM4HEP. It is designed for experiments ranging from table top size to large multi-detector test beams set-ups. To illustrate the flexibility of these tools, dedicated implementations, including physics analysis, for three of the CALICE1 collaboration prototypes SDHCAL2, AHCAL3 and SiWECAL4) were tested during test-beam campains at CERN SPS and DESY2 facilities. All three detectors use the same EDM, but different data acquisition systems and data formats.

After presenting the software architecture, the three specific detector implementations and results obtained during test-beam are shown. We finally discuss the ongoing development and future evolution planned for the framework.

1Calorimeter for linear collider experiment
2Semi-digital hadronic calorimeter
3Analog hadronic calorimeter
4Silicon-tungstene electromagnetic calorimeter

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