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experience with the custom-developed ATLAS trigger monitoring and reprocessing infrastructure

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After about two years of data taking with the ATLAS detector manifold experience with the custom-developed trigger monitoring and reprocessing infrastructure could be collected.

The trigger monitoring can be roughly divided into online and offline monitoring. The online monitoring calculates and displays all rates at every level of the trigger and evaluates up to 3000 data quality histograms. The physics analysis relevant data quality information is being checked and recorded automatically. The offline trigger monitoring provides information depending of the physics motivated different trigger streams after a run has finished. Experts are checking the information being guided by the assessment of algorithms checking the current histograms with a reference. The experts are recording their assessment in a so-called data quality defects database which is being used to build a good run list of data good enough for physics analysis. In the first half of 2011 about three percent of all data had an intolerable defect resulting from the ATLAS trigger system.

To keep the percentage of data with defects low any changes of trigger algorithms or menus must be tested reliably. A recent run with a sufficient statistics (in the order of one million events) is being reprocessed to check that the changes do not introduce any unexpected side-effects. The current framework for the reprocessing is a GRID production system custom built for ATLAS requirements called PANDA [1]. The reprocessed datasets are being checked in the same offline trigger monitoring framework that is being used for the offline trigger data quality. It turned out, that the current system works very reliable and all potential problems could be faced.

[1] PANDA: T. Maeno [ATLAS Collaboration], PanDA: Distributed production and distributed analysis system for ATLAS, J.Phys.Conf.Ser.119(2008)

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