

A Generic Framework for DAQ System in High Energy Physics Experiments

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Abstract: Data Acquisition (DAQ) System is essential for high energy physics experiments. For the large scale experiments, we prefer to use the distributed DAQ framework which offers the powerful online features. However, some small scale experiments have less complicated requirements for the online data processing, so a lightweight DAQ framework will save the development time and manpower. This paper presents the design and implementation of a generic DAQ framework on a standalone server. The framework consists of the functions of run control, configuration, online data transmission, online event building, lossless data compression, data storage and real-time data quality monitoring. The framework is flexible and easy to use, because each component has the independent interface so the users can easily customize the detector related functions. Till now, this framework has been successfully tested in various experiments that use TPC-THGEM and silicon pixel detectors, which demonstrated its good capability and high reliability.

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