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Data acquisition and online monitoring software for CBM testbeams

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The Compressed Baryonic Matter (CBM) experiment is intended to run at the FAIR facility that is currently being build at GSI in Darmstadt, Germany. For testing of future CBM detector and readout electronics prototypes, several test beamtimes have been performed at different locations, such as GSI, COSY, and CERN PS.
The DAQ software has to treat various data inputs, e.g. standard VME modules on the MBS system, or different kinds of the FPGA boards, read via USB, Ethernet or optical links.
The Data Acquisition Backbone Core framework (DABC) is able to combine such different data sources with event builder processes running on regular Linux PCs.
DABC can also retrieve the instrumental set up data from EPICS slow control systems and insert it into the event data stream for later analysis. Vice versa, the DIM based DABC control protocol has been integrated to the general CBM EPICS ioc by means of an EPICS-DIM interface. Hence the DAQ can be monitored and steered with an CSS based operator GUI.
The CBM online monitoring analysis is based on the GSI Go4 framework which can directly connect to DABC online data via sockets, or process previous data from listmode files. A Go4 subframework was implemented to provide possibility of parallel development of analysis code for different subdetectors groups. This allows to divide up the Go4 components into independent software packages that can run either standalone, or together at the beamtime in a full set up.

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