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CMD-3 First Level Trigger Infrastructure

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The cryogenic magnetic detector CMD-3 developed for experiments on elektron-pozitronnom collider VEPP-2000 is under construction at Budker Institute of Nuclear Physics now. This paper describes the modules which are forming an infrastructure and datapath of the First Level Trigger (FLT) of CMD-3. There are few types of modules specially developed for detector subsystems. These modules are intended for data gathering and processing of arguments of FLT, support of testing and precision calibration of FLT efficiency. The special attention is devoted to transmission synchronization of data pipelining, FLT reliability and efficiency on-line checks.

Summary

The CMD-3 detector is now under construction at Budker Institute of Nuclear Physics. The detector includes a magnetic spectrometer and electromagnetic calorimeter. In this paper the modules forming an infrastructure First Level Trigger (FLT) of CMD-3 are described.

Modules of the Interface of the First Level Trigger (IFLT) Drift and Z the chambers, focused on interaction with information payments in the environment of Data Acquisition System (DAQ) CMD-3 are described. One of feature of CMD-3 FLT is using standard CAMAC bus lines for arguments gathering. The collected data are processed to arguments of the First Level Trigger (FLT) and transferred by the fast serial channel with standard LVDS level ("fast link"). The module is produced and tested with Drift chamber, and the full performances are achieved.

It is described Amplitude Discriminators and the Adder (ADAM) which is interface for FLT of calorimeters. ADIS accept analogue signals of calorimeters and then produce this to logic signals - arguments for FLT. The module contains A/D converter and digital processing logic, and "fast link"for transfer of arguments to FLT. The module is produced and tested with CsI calorimeter. Good performance is shown, but addition software development is required.

The special attention is devoted to transmission synchronization of data pipelining, FLT reliability and efficiency on-line checks. Possibility of imitation of events for check of efficiency FLT is provided.

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