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Sharing high speed optical data transmission links with Slow Control stream

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An unified overall readout and optical high speed data transmission, called Belle2link, has been designed for use between Front-End electronics of all sub-detectors and the backend data acquisition in the Belle II experiment at KEK, Japan. These links provide not only a good electrical isolation, but also a bidirectional centralized data collection and command distribution. Further more the capacity of the gigabit fiber is far more than be needed, which stimulated us a idea to share the high speed data link with the slow control function(detector parameters setting). In addition to the description of belle2link in TIPP2011, this talk describes in detail about the relization of this slow control, including parameter setting in frontend electronics, combining slow control data in FE part with and separating slow control data in BE part from detector physics data, data priority management, single command mode and batch commands mode implementation. Tests made with drift chamber and silicon vertex detector systems are provided together with results and discussions.

Summary

The Belle2link, an unified overall readout with optical high speed data transmission shared with slow control functionality of detector parameter control has been designed for the Belle II experiment at KEK, Japan. A model system based on drift chamber system was successful and tt has been accepted by the collaboration. System for Drift Chamber had passed with cosmic ray test and beam test, system for Silicon Virtex Detector is now under beam test at DESY, Germany which showed also a success. Implementation and tests to other systems are under going.

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