Contribution ID: **136**   Type: **Oral presentation**

Check-Sort-Push and its application in CMS iRPC subsystem

Thursday 25 April 2024 15:30 (20 minutes)

Nowadays backend electronics has been used with help of unified high speed link to provide the fast control and slow control (electronics parameter setting) to frontend electronics in addition to providing trigger preprocessing and data readout. In such a case, the link is normally shared by many front channels, the processing time in backend for those channels with low readout priority, varies tremendously especially when in high rate or occupancy case, even with the zero-suppression and Multiplexing in FEE before the transmission, which make the processing (DeMux and trigger pre-processing) latency unpredictable or unacceptable. This presentation addresses this issue with simulation study and our Check-Sort-Push proposal to provide a solution to this, the necessity and advantage of this proposal over other ones with simulation/emulation results in high occupancy/high hit rate cases, and its firmware implementation both on the transmitter FEE and receiver BEE sides will be given. Application of this Check-Sort-Push in the improved RPC system(iRPC) in CMS phase II upgrade, with be provided as well as the analysis results from the cosmic ray test and beam test data taking.

Minioral

Yes

IEEE Member

Yes

Are you a student?

No

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Session Classification: Oral Presentations

Track Classification: Emerging Technologies, New Standards, Feedback on Experience