CEPC ref-TDR TDAQ

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Outline

12. TDAQ and Online
    (Fei Li + Xiaolu Ji for online)
    a. Requirements and design considerations
    b. Technology survey and our choices
    c. R&D efforts and results
    d. Detailed design of TDAQ
    e. Detailed design of Online

- **Introduction**
- Requirements and design considerations
  - Physics requirements for trigger
  - Trigger requirements for sub-detectors
  - Consideration on readout strategy
    - Trigger readout-on-FEE vs. Trigger readout-on-BEE
    - Main constraint on FEE-triggerless readout vs. CEPC's data rate
  - Consideration of the readout-interface for CEPC electronics
  - Event rate estimation & background rate estimation
- Technology survey and our choices
  - Consideration on Backend Trigger strategy (Hardware Trigger vs. Software Trigger)
  - Consideration on high level trigger algorithm & resources
- **Trigger**
  - Previous experience on large facilities
  - Previous R&Ds
  - Common Electronics interface
    - Target
  - Structure of the Trigger for CEPC
  - Common Trigger Board
    - Target
    - Study on FPGA resources, capability
    - Preliminary design of the common Trigger Board for CEPC
    - Possibility for advance algorithm & future update
    - Board unit cost estimation
  - Resource cost estimation
- **DAQ**
  - Previous experience on large facilities
  - Previous R&Ds
  - Platform for DAQ and computing
  - Algorithm & architecture of the DAQ for CEPC
  - Resource cost estimation
- **Experiment Control System**
  - Requirements on sub-detectors
  - On-detector monitoring consideration
  - On-detector slow control consideration
  - Electronics monitoring and control consideration
  - ECS for CEPC
- **Summary**
  - Summary on data volume
  - Summary on cost