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A New Scheme of Redundant Timing Crosschecking for Frontend Systems

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In high energy physics experiments, frontend digitization modules are usually driven by a common clock. At the frontend electronics and digitization modules of the detector, a precise timing reference must establish in order to make a useful timing measurement. It would be very useful for the frontend digitization system to include a feature of redundant timing crosschecking. The inspiration for the timing crosschecking scheme came from the long-abandoned analog mean-timer schemes. In this scheme, several Front-end modules are connected together through a cable set with taps connected to the digitization modules. Pulses are driven from every FE modules alternately without overlapping. The arrival times of pulses sent from FE modules are digitized at the timing crosschecking module. The mean times will change as temperature changes, but their difference between two FE modules are cancelled mathematically. This feature enables easy achievement of good timing precision without the need for complex hardware.

Minioral

Yes

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