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White Rabbit based sub-nsec time synchronization, time stamping and triggering in distributed large scale astroparticle physics experiments

Tuesday 7 June 2016 15:00 (1h 30m)

Time-Synchronization to sub-nsec precision between detector subsystems
in large scale astroparticle physics experiments can efficiently be
provided by White-Rabbit (WR), a new ethernet-based
technology for time and frequency transfer.

We discuss principles and advantages of WR for distributed
detector arrays, which allows clock-synchronziation and
trigger-time stamping at sub-nanosecond precision;
as well as for complex and flexible topological trigger strategies,
based on ethernet-routed timestamps.

We describe a White-Rabbit implementation
at the Gamma-Ray facility HiSCORE (Siberia) for airshower
reconstruction;
and first experience with the next generation Zynq-based WR-ZEN
platform.

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