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ALICE - Central Trigger System for LHC Run 3

ALICE (A Large Ion Collider Experiment) is one of the four main experiments at the CERN Large Hadron Collider. The ALICE collaboration plans a major detector upgrade during long shutdown 2, which started at the end of 2018, followed by Run 3 starting in 2021. In Run 3 ALICE will be able to collect 10 nb^{-1} of Pb-Pb collisions at luminosities up to $\mathcal{L} = 6 \times 10^{27}$ cm^{-2} s^{-1} corresponding to collision rates of 50 kHz, using a different readout strategy. The ALICE upgrade will also make possible the collection of 6 pb^{-1} of pp collisions at the equivalent Pb-Pb nucleon energy as well as 50 pb^{-1} of p-Pb collisions, both at collision rates of up to 200 kHz. With these physics goals, the statistics of data in ALICE will be increased by a factor of 100 over the numbers achieved with the present ALICE detector up to LS2. The ALICE upgrade will require a very different triggering strategy with respect to the current and hence a new Central Trigger System (CTS) is needed.
The ALICE-CTS will be completely redesigned and the strategy for selecting events will be different from that employed in previous runs. The CTS will have a Central Trigger Processor (CTP) and Local Trigger Units (LTUs) as detector interface. However, the heart of the CTS will be a trigger board referred to as ALICE Trigger Board (ATB), based on a Kintex UltraScale FPGA, and the use of a novel Timing Trigger Control system based on Passive Optical Networks (TTC-PON). An overview and an account of the current status of the ALICE-CTS will be presented.

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