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The time synchronization of the ALICE Fast Interaction Trigger detector

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The Fast Interaction Trigger (FIT) is used as an interaction trigger, luminometer, the first indicator of the vertex position, and the forward multiplicity counter of the ALICE experiment at CERN during Run 3 of the LHC. The FIT consists of three subsystems: FT0 – a set of two fast Cherenkov arrays, FV0 – a large segmented scintillator disk and FDD (Forward Diffractive Detector) – also a scintillator located at very high pseudorapidity. All three subsystems (FT0, FV0 and FDD) use a single design of the front-end electronics with CFD, TDC and ADC parts. The collected data is processed in FPGA. Hit time measurements are done relative to the LHC high-quality clock with a time resolution of ~ 50 ps. FIT FEE connected to ALICE DAQ with GBT links for timestamps distribution and measured data sending. The time synchronization concept of the FIT detector with ALICE DAQ, clock drift compensation mechanism and time alignment procedure will be shown.

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