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Status of the ALICE Fast Interaction Trigger for the Run 3

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The new hybrid system of the forward detectors called the Fast Interaction Trigger (FIT) was developed and integrated with the ALICE experimental setup at the LHC during LS2 (2019 – 2022). It consists of separate arrays of counters – FT0, FV0 and FDD, using different techniques of charged particles detection. FIT is the primary online ALICE trigger. It produces low latency (<425 ns) minimum bias, vertex, and centrality triggers – the fastest (LM0) triggers of the ALICE experiment. The different FIT trigger combinations are used for online luminosity and background monitoring during pp and Pb-Pb collisions. FIT front-end electronics (FEE) allow events to be processed at every LHC clock period (25 ns), enabling both triggered and continuous readout modes. The general offline purposes of FIT are the precise collision time, centrality, event-plane determination and veto for diffractive and ultra-peripheral heavy-ion collisions. The first is also used as a reference for PID with TOF detector.

Since the beginning of Run 3, FIT has been performing very well. The FT0 detector shows outstanding time resolution of about 17 ps for pp and 4 ps for Pb-Pb collisions, good vertex purity, and correlation with ALICE trackers. Moreover, FIT became ALICE's main online luminometer and has been the reference for experiment coordination. In the presentation, we describe the FIT construction, layout, and our experience of operation during the first two years of Run 3.

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