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The ALICE Fast Interaction Trigger Upgrade

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Run 3 opens the high luminosity era of the LHC. Collecting vast data samples will enable measurements with unprecedented precision. ALICE aims to record all minimum bias data at the projected 1 MHz pp and 50 kHz heavy ion collision rates. The expected data processing and storage rate will reach ~3 TB/s. To meet this challenge, ALICE underwent a major upgrade of its detectors and systems. One of the four new detectors is the Fast Interaction Trigger (FIT). FIT consists of three subdetectors: FT0, FV0 and FDD. FT0 will generate online triggers, allow multiplicity and vertex determination, background monitoring and luminosity measurements. FT0 will also allow event plane, centrality determination, and provide the precise collision time for the timeof-flight-based particle identification in the offline mode. FT0 is composed of two Cherenkov arrays, installed on both sides of the interaction point, at -0.8 m (-3.4 < \boxtimes < -2.3) and +3 m (3.8 < \boxtimes < 5.0). One of the FT0 arrays is attached to the FV0. FV0 is a segmented, ~1.5 m in diameter plastic scintillator disc, covering the pseudorapidity range of 2.2 < \(\times \) 5.1. FV0, together with FT0, will serve as the main forward multiplicity detector with a major role in the event plane and centrality determination. The two FDD plastic scintillator arrays are installed at the distance of +17, and -19.5 m from the IP, covering the pseudorapidity ranges of 4.7 < \boxtimes < 6.3 and -6.9 < \boxtimes < -4.9, respectively. FDD will contribute to diffractive measurements and triggers. All FIT detectors use custom-designed front-end electronics with ~200 ns signal processing time. Our poster will include photos of the installed FIT components and the main performance plots from the October 2021 LHC pilot beam.

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