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Performance and operational experience of ALICE FIT in LHC Run3

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The ALICE experiment underwent significant upgrades during the LHC Long Shutdown 2 (2019–2021), including the installation the new Fast Interaction Trigger (FIT) system. FIT comprises three detectors FT0, FV0 and FDD, which use Cherenkov and scintillation effects to detect charged particles originating from proton-proton (pp) and heavy-ion collisions [1]. FIT uses dedicated front-end electronics to measure the time and charge of pulses at bunch crossing interval of 25 ns and pp (Pb–Pb) interaction rates of up to 1 MHz (50 kHz). In the online regime, the FIT detector provides an initial vertex position, fast triggers, beam luminosity, and background monitoring. The offline FIT data are important for event selection, determining and measuring multiplicity, centrality, collision time, event plane, and veto for diffractive and ultra-peripheral heavy-ion collisions.

This talk will introduce the FIT's operational experience and performance, as well as its achievements and expected physics performance improvements.

References

1. W. H. Trzaska et al., Nucl. Instrum. Methods A 958, 162116 (2020)

Primary author: KARAVICHEVA, Tatiana (Institute for nuclear reseach RAS, Affiliated with an international laboratory covered by a cooperation agreement with CERN)

Co-authors: Mr FURS, Artur (Institute for Nuclear Research of the Russian Academy of Science, Affiliated with an international laboratory covered by a cooperation agreement with CERN); Dr FINOGEEV, Dmitriy (Institute for Nuclear Research of the Russian Academy of Science, Affiliated with an international laboratory covered by a cooperation agreement with CERN); SUKHANOV, Mikhail (Institute for Nuclear Research of the Russian Academy of Science); Mr VOZNIUK, Nikita (Institute for Nuclear Research of the Russian Academy of Science); KARAVICHEV, Oleg (Institute for Nuclear Research of the Russian Academy of Science)

Presenter: KARAVICHEVA, Tatiana (Institute for nuclear reseach RAS, Affiliated with an international laboratory covered by a cooperation agreement with CERN)

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