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Challenges and progress in the design of the Fast Interaction Trigger for the ALICE upgrade.

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The Fast Interaction Trigger (FIT) [1] will be installed as part of the ALICE upgrade [2] during the Long Shutdown 2 of the LHC in 2019. To cope with increased luminosity and event rate after LHC upgrade ALICE has to modify most of its detector subsystems, which includes replacing currently used T0, V0 and FMD with FIT.
Because FIT is located at the very center of ALICE, the accessibility will be very limited after the upgrades of other subdetectors are installed. Thus early and reliable design, as well as thorough testing, is required. This is also why FIT modules should be radiation hard and resist ageing. Moreover FIT is expected to achieve exceptional time and amplitude resolution, which in turn translate to the (independent from tracking) vertex position estimation and multiplicity determination (event plane, centrality) at high pseudorapidity range.
This talk will present the latest design concepts of the FIT detector module along with the beam test results carried out at CERN in the fall of 2015 in light of their importance for the overall future performance of ALICE.

[1] W.H Trzaska, Synergy in Fast Timing R&D, talk at NICA Days 2015 in Warsaw
[2] The ALICE Collaboration, Technical Design Report for the Upgrade of the ALICE Readout and Trigger System (http://cds.cern.ch/record/1603472?ln=en)

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