VCI2025 - The 17th Vienna Conference on Instrumentation



Contribution ID: 24

Type: Poster

ALICE Fast Interaction Trigger Upgrade

Tuesday 18 February 2025 16:10 (20 minutes)

The Fast Interaction Trigger (FIT), installed in 2021 during the Long Shutdown 2 of the Large Hadron Collider (LHC), is one of the crucial ALICE (A Large Ion Collider Experiment) detectors. It performs several essential functions, including delivery of the fast (<425 ns) online minimum bias collision trigger and monitoring luminosity and background conditions. The achieved collision time precision is 17 ps in proton-proton collisions and 4.4 ps in Pb-Pb collisions. It is used as a time-zero reference for the time-of-flight particle identification and online vertex determination. FIT data are also used to assess centrality and determine the collision plane. To further enhance the detector's performance and operational reliability, we are preparing an upgrade of FIT Front-End Electronics (FEE) and implementing ALFRED (ALICE Low-Level Front-End Device). The former aims to improve signal processing from the scintillation arrays (FV0 and FDD). The latter will optimise FEE integration with the Detector Control System. The upgrade will be finalised during the LHC winter break from November 2024 to March 2025.

The presentation will include the latest FIT performance plots, an outline of FEE modifications, and the new DCS architecture. The impact of the upgrade on FIT's functionality for the remainder of the LHC Run 3 and 4 will be discussed, as well as the prospects of further developments and possible applications in the forward detectors of the high-luminosity successor of ALICE.

Primary experiment

ALICE

Author: Mr ROSLON, Krystian (Warsaw University of Technology (PL))
Presenter: Mr ROSLON, Krystian (Warsaw University of Technology (PL))
Session Classification: Coffee & Posters A

Track Classification: Electronics