38th INTERNATIONAL CONFERENCE ON HIGH ENERGY PHYSICS

AUGUST 3 - 10, 2016
CHICAGO

Contribution ID: **64**   Type: **Oral Presentation**

The Fast Interaction Trigger Upgrade for ALICE (12' + 3')

Thursday, 4 August 2016 14:45 (15 minutes)

The ALICE Collaboration is preparing a major detector upgrade for the second LHC long shutdown (2019-20). The LHC heavy-ion luminosity and collision rate from 2021 onwards will considerably exceed the design parameters of the present ALICE forward trigger detectors. Furthermore, the introduction of a new Muon Forward Tracker will significantly reduce the space available for the upgraded trigger detectors. To comply with these conditions a Fast Interaction Trigger (FIT) has been designed. FIT will be the primary forward trigger, luminosity, and collision time measurement detector. The FIT will be capable of triggering at an interaction rate of 50 kHz, with a time resolution better than 30 ps, with 99% efficiency. It will also determine multiplicity, centrality, and reaction plane. FIT will consist of two arrays of Cherenkov radiators with MCP-PMT sensors and of a scintillator ring. The arrays will be placed on the opposite sides of the interaction point (IP). Because of the presence of the hadron absorber of the muon spectrometer, the placement of the FIT arrays will be asymmetric: about 800 mm from IP on the absorber side and 3200 mm from IP on the opposite side. Scheduled for installation in 2020, FIT is in the midst of an intense R&D and prototyping period. The timing, amplitude and efficiency characteristics are determined with relativistic particles and with lasers. The ongoing Monte Carlo studies verify the physics performance and refine the geometry of the FIT arrays. The presentation will give a short description of FIT, a summary of the performance, and the outcome of the simulations and beam tests. This material is based upon work supported by the National Science Foundation under grant NSF-PHY-1305280.

Primary author: Prof. GARCIA-SOLIS, Edmundo (Chicago State University (US))

Presenter: Prof. GARCIA-SOLIS, Edmundo (Chicago State University (US))

Session Classification: Detector: R&D and Performance

Track Classification: Detector: R&D and Performance