
38th INTERNATIONAL CONFERENCE
ON HIGH ENERGY PHYSICS
AUGUST 3 - 10, 2016
CHICAGO

Contribution ID: **963** Type: **Poster**

# Upgrade of the CMS muon trigger system in the barrel region

*Monday 8 August 2016 18:30 (2 hours)*

To continue triggering with the LHC Run-1 performance in the LHC's Run-2 the Level-1 Trigger of the Compact Muon Solenoid experiment underwent a significant upgrade. One part of this upgrade was the reorganisation of the muon trigger path from a subsystem-centric view in which hits in the Drift Tubes (DT), the Cathode Strip Chambers (CSC), and the Resistive Plate Chambers (RPC) were treated separately in dedicated track-finding systems to one in which complementary detector systems for a given region (barrel, overlap, and endcap) are merged at the track-finding level. This in turn required the development of a new system to sort as well as cancel-out the muon tracks found by each system.

An overview will be given of the new Track-finder system for the barrel region, the Barrel Muon Track Finder (BMTF) as well as the cancel-out and sorting layer, the upgraded Global Muon Trigger (uGMT). Both the BMTF and uGMT are implemented in a Xilinx Virtex-7 card utilizing the uTCA architecture. While the BMTF improves on the proven and well-tested algorithms used in the Drift Tube Track Finder during Run-1, the uGMT is an almost complete re-development due to the re-organisation of the underlying systems from complementary track finders to regional track finders. Additionally the uGMT calculates a muon's isolation using energy information received from the calorimeter trigger. This information is added to the muon objects forwarded to the Global Trigger.

Finally, first results of the muon trigger performance in the barrel region will be shown.

**Primary author:** RABADY, Dinyar (Austrian Academy of Sciences (AT))

**Presenter:** RABADY, Dinyar (Austrian Academy of Sciences (AT))

**Session Classification:** Poster Session

**Track Classification:** Detector: R&D and Performance