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Status of GE2/1, the 2nd CMS muon Triple-GEM system

We present the status of the new Triple-GEM muon sub-system of the CMS forward muon spectrometer, GE2/1. The first station, GE1/1 is under commissioning in CMS while GE2/1 detector construction will start beginning of 2022. A GE2/1 chamber is 4 times larger than a GE1/1 chamber, made of 1 m-long GEM foils. Because of the limitations in the current PCB manufacturing, a GE2/1 chamber is actually divided into 4 individual Triple-GEM detector modules. GE2/1 detector and electronics design benefits of several improvements with respect to GE1/1, namely: (i) new GEM foil segmentation scheme to lower the probability of propagating discharges and to prevent large cross-talk across the foil sectors, and (ii) improved front-end amplifier protection circuit. In Fall 2021 a GE2/1 detector module will be tested in a muon test beam and a full GE2/1 chamber will be installed in CMS as demonstrator. In this contribution we will focus on the GE2/1 detector performance measured with the final prototypes, the preliminary results from the Fall 2021 test beam and from the CMS demonstrator focusing on the improvements compared to GE1/1 and finally presenting the challenge of the GE2/1 chamber construction.

Primary experiment

CMS: Muon Detector

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