

## **R&D results of iRPC tested at GIF++ for CMS Phase II upgrade**

*Wednesday, 21 February 2018 11:00 (20 minutes)*

In the future Phase-2 LHC runs, LHC instantaneous luminosity will reach a maximum value of  $7 \times 10^{34} \text{ cm}^{-2} \text{ s}^{-1}$  and the CMS muon system will be extended up to  $\eta$  (pseudo rapidity) region of 2.4 where the expected maximum particle rate is  $600 \text{ Hz cm}^{-2}$ . In view of the expected background conditions, we have studied high-sensitive thin phenolics double-gap RPC models to improve the rate capability in the past few years. The improved Resistive Plate Chambers (iRPCs) has been studied with cosmic muons and with 100-GeV SPS H4 muon beams at CERN at the new Gamma Irradiation Facility (GIF++). The performance of iRPC was tested with a maximum gamma rate of about  $4 \text{ kHz cm}^{-2}$  by using dedicated algorithm for clustering and tracking and fairly satisfies the operational condition required in the future Phase-2 LHC.

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**Session Classification:** High Luminosity / High Rate