

## High rate, high time precision RPC detector for LHC

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With the increase of the LHC luminosity foreseen in the coming years many detectors currently used in the different LHC experiments will be dramatically impacted and some need to be replaced. The new ones should be capable not only to support the high particle rate but also to provide time information to reduce the data ambiguity due to the expected high pileup.

RPC using low-resistivity materials are proposed to equip the very forward region of the CMS detector. In their single-gap version they can stand rates of few kHz/cm<sup>2</sup>. Their time precision of about 1ns can allow to reduce the noise contribution leading to an improvement of the trigger rate.

New electronics equipped with excellent timing precision measurement are being developed to read out the RPC detectors from both side of the strips to allow good spatial resolution along them. First results of this electronics will be presented.

Tests at Gamma Irradiation Facility (GIF) and SPS at CERN was performed to validate the capability of such detectors to support high irradiation environment with limited consequence on their efficiency. Results of these tests will be presented and discussed.

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