**38th INTERNATIONAL CONFERENCE
ON HIGH ENERGY PHYSICS**

AUGUST 3 - 10, 2016
CHICAGO

Contribution ID: **992**   Type: **Oral Presentation**

The LHCb RICH system: current detector performance and status of the upgrade program (12' + 3')

Saturday 6 August 2016 14:45 (15 minutes)

LHCb is a precision experiment devoted to the study of CP violation and rare decays of b and c quarks, and to the search for new physics beyond the Standard Model at the Large Hadron Collider (LHC) at CERN. The Ring-Imaging Cherenkov (RICH) system is a key component of the LHCb experiment: it consists of two RICH detectors that provide charged particle identification over a wide momentum range (2-100 GeV/c) and angular acceptance (15-300 mrad). The LHCb RICH system has been performing extremely well during Run 1 and is providing the LHCb experiment also in Run 2 with a robust, reliable and precise particle identification system for all hadronic processes.

Performance of the RICH detectors measured from data will be presented, with special reference to its dependence on calibration parameters and event multiplicities.

The LHCb experiment is preparing for an upgrade during the second LHC long shutdown (2019-2020) in order to fully exploit the LHC flavor physics potential. A five-fold increase in instantaneous luminosity is foreseen reaching 2×10^{33} cm^{-2} s^{-1}. In order to reach the planned 40 MHz continuous data taking, a substantial change in the LHCb trigger and read-out schemes will be implemented. The RICH detectors will require new photo-detectors, electronics and slightly modified optics. Tests of the complete photo-electronic chain have been performed in dedicated test beams in 2014-15. The status and perspectives of RICH upgrade program will be presented.

Primary author: FIORINI, Massimiliano (Universita di Ferrara & INFN (IT))

Presenter: FIORINI, Massimiliano (Universita di Ferrara & INFN (IT))

Session Classification: Detector: R&D and Performance

Track Classification: Detector: R&D and Performance