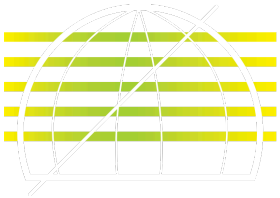

RPC 2022

Contribution ID: **83** Type: **Oral**

The ATLAS RPC system for the LHC Run-3

Monday 26 September 2022 09:50 (25 minutes)

Resistive Plate Chambers provide the barrel region of the ATLAS detector with an independent muon trigger and a two-coordinate measurement. The chambers, more than 3700 gas volumes in total covering a surface area of about 4000m2, are arranged in three concentric double layers and operated in a strong magnetic toroidal field.

The system was originally designed to operate for 10 years with a luminosity up to the LHC nominal value of 10 ˆ 34 cm-2s-1. After a successful data taking period in Run-2, when the luminosity reached more than twice the nominal value, the detector has undergone an intense maintenance aimed at ensuring efficient data taking during the just started Run-3.

Several interventions have been carried out on the detector mainly concerning the gas distribution with the aim of keeping the system under control and reducing the amount of gas released into the atmosphere.
Several interventions have been carried out on the detector mainly concerning the gas distribution with the aim of keeping the system under control and reducing the amount of gas released into the atmosphere.
The interventions can be summarised as follows:
- new gas distribution racks have been added in order to increase the vertical segmentation and in view of the installation of the new chambers for the phase-2 upgrade
- no-return valves have been installed on the chamber outputs to avoid reverse flows with large leaks
- a massive repair campaign have been done for fixing the continuously developing leaks
- a new repair technique aimed to fix and prevent new leaks has been tested
- the segmentation of the HV channels has been doubled in a third of the spectrometer.

The different aspects of the activity carried out in LS2 are described, from motivation to implementation. The expected system performance is also presented.

Presenter: BOSCHERINI, Davide (Universita e INFN, Bologna (IT))

Session Classification: RPC@LHC