Contribution ID: **48** Type: **Oral Contribution**

Studies of gas gaps current density in the ATLAS RPC detector during 2018 data taking at Large Hadron Collider

Monday, 10 February 2020 14:40 (20 minutes)

The ATLAS Resistive Plate Chamber (RPC) detector is a tracking trigger, used to primarily select high momentum muons in the ATLAS barrel region (|\eta|<1.05) at the 40 MHz collision rate, and to provide muons azimuthal coordinates. The RPC system consists of about 3700 gas volumes covering a sensitive surface of about 4000 m^2. It is arranged in three concentric double layers distributed on a radial distance of about 5m and operating at approximately 0.5 Tesla toroidal magnetic field. RPCs provide 6 points along the muon track with a space-time resolution of about 1cm^2 x 1ns. This work studies systematically gas gaps current as a function of the electric field applied on the gas, and environmental parameters both without/with the LHC beam induced background and up to an instantaneous luminosity L_inst =2x10^34 cm^-2 s^-1 (twice larger the design LHC luminosity). These measurements have been used to study the RPC working condition and to extrapolate the detector response to High Luminosity LHC regime with L_inst=7.5x10^34 cm^-2 s^-1.

Primary author: KRASNOPEVTSEV, Dimitrii (ATLAS Collaboration)

Presenter: KRASNOPEVTSEV, Dimitrii (ATLAS Collaboration)

Session Classification: Large systems and Upgrades