Contribution ID: **243** Type: **Poster**

Pressure evolution studies in the LHC beam pipe vacuum system at room temperature

Tuesday 19 June 2018 18:00 (20 minutes)

With the increased beam energy and the upcoming high luminosity, electron cloud and synchrotron radiation could have an important impact on the LHC residual gas density and beam parameters. An innovative room temperature Vacuum Pilot Sector (VPS) is installed in a straight section of the LHC to investigate these phenomena *in situ*.
The Large Hadron Collider (LHC) is affected by electron cloud that reduces the quality of the beam, provokes instabilities, and increases the residual-gas pressure and heat load in the vacuum chambers. Synchrotron radiation, via photoelectron emission, plays also an important role on the electron cloud build-up.
This work focuses on the comparison of pressure profiles measure in the VPS with surfaces of different nature, such as mild baked copper, non-evaporable getter coating (NEG) and amorphous carbon coating.
In addition, the VPS enables to disentangle the residual gas sources, including: surface outgassing, residual gas ionisation followed by electron stimulated desorption, as well as photon stimulated desorption. The resulting pressure distribution will be presented and analysed considering surface properties and the LHC beam parameters.
The preliminary outcomes confirm that amorphous carbon coating is compatible with future LHC's vacuum requirements.

Primary author: Dr BAGLIN, Vincent (CERN)

Co-authors: HENRIST, Bernard (CERN); BURATIN, Elena (EPFL - Ecole Polytechnique Federale Lausanne (CH))

Presenter: BURATIN, Elena (EPFL - Ecole Polytechnique Federale Lausanne (CH))

Session Classification: Poster Session Tuesday

Track Classification: Vacuum in Accelerators