



Contribution ID: 1926 Contribution code: TUPR68

Type: **Poster Presentation**

DYVACS code: calculation of gas density profiles for dynamic conditions in FCCee accelerator.

Tuesday, 21 May 2024 16:00 (2 hours)

The computation of residual gas density profiles in particle accelerators is an essential task to optimize beam pipes and vacuum system design. In a hadron collider such as the LHC, the beam induces dynamic effects due to ion, electron and photon-stimulated gas desorption. The well-known VASCO was already used to estimate pressure profiles in steady state conditions. Nevertheless, some phenomena are not considered such as the ionization of residual gas by the electron clouds (EC) and the evolution of the electronic density related to the EC build up. Therefore, we proposed an upgrade by introducing EC maps to estimate the electron density and the ionization of gas by electrons. Results obtained with DYVACS reproduces with a good accuracy the experimental dynamic pressure recorded in the VPS beam pipes sector of the LHC from the proton beam injection to the stable beam period, for several materials of vacuum chamber. Additionally, DYVACS was used as a predictive tool to compute the pressure evolution for the Future Circular Collider e- e+. New experimental measurements on electron-stimulated desorption by Compton electron have been carried out and implemented in DYVACS inputs.

Footnotes

Funding Agency

Paper preparation format

Region represented

Europe

Primary author: BILGEN, Suheyla (Université Paris-Saclay, CNRS/IN2P3, IJCLab)

Presenter: BILGEN, Suheyla (Université Paris-Saclay, CNRS/IN2P3, IJCLab)

Session Classification: Tuesday Poster Session

Track Classification: MC7: Accelerator Technology and Sustainability: MC7.T14 Vacuum Technology