



Contribution ID: 242

Type: **Contributed**

Technological challenges and solutions for vacuum systems of modern particle accelerators

Wednesday 20 June 2018 15:20 (20 minutes)

Modern particle accelerators introduced have more and more demanding specifications to the beam vacuum chambers. From one side, the specified vacuum level is often not only UHV but even XHV, from another side, the cross sectional sizes of beam vacuum chamber are getting smaller and smaller, down to as little as 5 mm. In addition, this can also be complicated by another specification: short bunch machines are very sensitive to a vacuum chamber surface resistance coupled with beam longitudinal impedance which, in turn, affects the beam emittance, thus the acceptable level of surface resistance should be specified for each application and met in beam vacuum chamber design. Other challenges are the ion induced pressure instability and the beam induced electron multipacting (BIEM) in positively charged machines. ASTeC vacuum science group is working on various solutions for the listed problems. Among them, the non-evaporable getter (NEG) coating as one of the most preferable solutions to provide UHV/XHV especially in conductance limited vacuum chambers), the laser ablation surface engineering (LASE) as a very efficient method to suppress BIEM, and others. The overview of ASTeC progress will be given in this talk.

Primary author: Dr MALYSHEV, Oleg (STFC)

Co-author: Dr VALIZADEH, Reza (STFC)

Presenter: Dr MALYSHEV, Oleg (STFC)

Session Classification: Vacuum in Accelerators

Track Classification: Vacuum in Accelerators