

Virtual Pepper-Pot Technique for 4D Phase Space Studies.

Wednesday 16 October 2019 16:58 (4 minutes)

There are ongoing beam coupling studies at the Photo Injector Test facility at DESY in Zeuthen (PITZ). Electron beam asymmetries have been observed and gun quadrupoles are installed to correct them. A 4-dimensional phase space characterization is required to understand the asymmetries in detail. A novel technique for 4-dimensional transverse beam phase space measurement is developed at PITZ. This method is called Virtual Pepper-Pot (VPP), because key principles of the pepper-pot mask method are applied. The 4D transverse phase space is reconstructed from a pepper-pot like pattern that is generated by crossing each measured horizontal slit beamlet with all measured vertical slit beamlets. All elements of the 4D transverse beam matrix are calculated and applied to obtain the 4D transverse emittance, 4D kinematic beam invariant and coupling factors. Results of the technique for bunches of 0.5 nC charge are presented.

Primary author: Mr GEORGIEV, Georgi (DESY Zeuthen)

Co-author: KRASILNIKOV, Mikhail (DESY Zeuthen)

Presenter: Mr GEORGIEV, Georgi (DESY Zeuthen)

Session Classification: Speed talks

Track Classification: Speed talks: Diagnostics