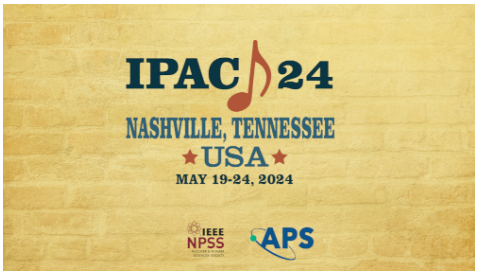

Contribution ID: **1197** Contribution code: **MOPS26** Type: **Poster Presentation**

Macro-particle simulations of longitudinal peak detected Schottky signals

Monday, 20 May 2024 16:00 (2 hours)

The peak detected Schottky system is a powerful diagnostic tool for determining longitudinal beam parameters. According to the theoretical model, the peak value of the signal from a wideband pick-up contains information on particle distribution as a function of the synchrotron frequency. Due to intrinsic assumptions for modelling the acquisition set-up and uncertainties of beam parameters, a one-to-one comparison of predictions and measurements remains a challenge. This work presents the peak detected Schottky spectra obtained in idealized macro-particle simulations. Following refinement of the theoretical model, a direct comparison was performed under controlled conditions. Agreement with the numerical results was improved by introducing a form factor, which describes the probability of a particle being present in the observation window. Modifications due to collective effects are discussed as well. Finally, the corresponding peak detected spectra for various intensities, assuming a simplified impedance model, are presented.

Footnotes

Funding Agency

Paper preparation format

LaTeX

Region represented

Europe

Primary author: KARPOV, Ivan (European Organization for Nuclear Research)

Co-authors: SCHUDERER, Felix (European Organization for Nuclear Research); SHAPOSHNIKOVA, Elena (European Organization for Nuclear Research)

Presenter: KARPOV, Ivan (European Organization for Nuclear Research)

Session Classification: Monday Poster Session

Track Classification: MC5: Beam Dynamics and EM Fields: MC5.D03 Calculations of EM fields Theory and Code Developments