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Space charge in the GALACTIC Vlasov solver

Wednesday 4 June 2025 16:00 (2 hours)

The GALACTIC Vlasov solver can be used to study the impedance-induced transverse coherent instabilities, considering any longitudinal distribution function, describing the beam with transverse coherent oscillation modes in the frequency domain and ending up with an eigenvalue system to solve. In this paper, the effect of the transverse coherent direct space charge is added, considering a linear RF force and three distribution functions in the longitudinal plane: Water-Bag (or uniform), Air-Bag (or Dirac delta) and Gaussian. These three cases are then compared to the Air-Bag bunch in a Square potential well (ABS) model, which has been often used in the past.

Footnotes

Paper preparation format

LaTeX

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