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Type: **Invited Oral Presentation**

A novel Vlasov approach for modeling electron cloud instabilities

Monday, 20 May 2024 14:30 (30 minutes)

This presentation discusses the generalization of the two-dimensional impedance model in the presence of an electron cloud. It will be discussed the implementation of a linear model of the e-cloud forces including both dipolar and quadrupolar forces to improve the modeling of the electron cloud instabilities. The linear model is included in the Vlasov equation, which allows for finding unstable modes. Benchmarking with conventional macro-particle tracking codes by also implementing the same linear model is discussed for negative, low, as well as large chromaticity. It is found that the instability modes by Vlasov agree well with those of the macro-particle simulations, using the same linear model for negative and low chromaticity. For large-chromaticity, the mode visible in the macro-particle simulations is among the unstable Vlasov modes. The present status of the checks with impedance-driven instabilities is being discussed also including recent benchmarking against tracking simulations and measurements.

Footnotes

Funding Agency

Paper preparation format

Region represented

Europe

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