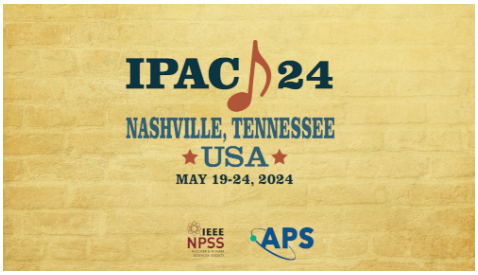

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Wakefield analysis of the FCC-ee collimation system

Tuesday, 21 May 2024 16:00 (2 hours)

The paper focuses on calculating the longitudinal and transverse wake-fields and impedances of the FCC-ee collimators through electromagnetic simulations using CST, ECHO3D and IW2D codes. The conducted studies have revealed that the collimation system can significantly contribute to the overall collider impedance/wake budget, both broad-band and narrow-band. The single bunch dynamics simulations with PyHEADTAIL have shown that the wake-fields of the collimators are expected to play a crucial role in reducing the TMCI threshold. In addition, the higher order modes (HOM) trapped in collimator's structures can affect the multi-bunch stability. In this paper some design solutions are proposed to suppress the HOMs. However, further studies are still required to mitigate the impact of this wake-field source on beam quality and stability.

Footnotes

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