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## Studies and mitigation of TMCI in FCC-ee

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Previous studies have identified turbulent mode coupling instability (TMCI) as one of the most severe single-bunch instabilities in the FCC-ee collider, potentially limiting its performance. Its threshold is influenced by both transverse and longitudinal wakefields arising from vacuum chamber resistive wall effects, discontinuities, and beam-beam interactions, the latter of which can be seen as a transverse cross-wake force.

In this paper, we investigate the TMCI using the most recent collider parameters and an updated impedance model. We also explore various mitigation techniques aimed at increasing the instability threshold, including positive chromaticity and a feedback system.

### Footnotes

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