

# Studies of single and multi-bunch instabilities in linacs using RF-Track

*Monday 26 August 2024 16:00 (2 hours)*

In high-intensity linacs, bunch-to-bunch effects due to the excitation of short and long-range wakefields can lead to beam instabilities and beam breakup. Wakefields can be due to resistive or geometric effects excited in the RF structures or in the beam pipe. From version 2.3.0 onwards, the particle tracking code RF-Track has been modified to implement a multi-bunch beam model that simplifies and optimises the calculation of single and multi-bunch effects. The effect of wakefields on the beam is assessed by computing the action amplification due to incoming jitter. The jitter amplification due to multi-bunch effects is evaluated on the Super-KEK linac and found to be in agreement with experimental measurements.

## Footnotes

## Funding Agency

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**Track Classification:** MC1: Beam Dynamics, Extreme Beams, Sources and Beam-Related Technologies: MC1.1 Beam Dynamics, beam simulations, beam transport