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The RF design of a fast reactive tuner for UK-XFEL superconductor cavities

Tuesday 23 September 2025 14:30 (3 hours)

A Ferro Electric Fast Reactive Tuner(FE-FRT) for UK-XFEL superconducting Tesla Cavities is under development, which is used to suppress the microphonics of the superconducting cavities, a fast dynamic detuning. The EF-FRT tuner doesn't have moving parts and so has an extremely fast tuning process to compensate the microphonics. The RF design of the FRT includes the optimization of the Figure of Merit by changing the geometry of the tuner using the CST eigenmode solver. With a higher FoM that means there is a larger tuning range with fixed power dissipated in the FE-FRT. An overview of the approximation calculation theory and automatic optimization of FoM will be discussed in detail.

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Yes

Footnotes

Funding Agency

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