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ADAPTIVE COMPENSATION FOR LORENTZ FORCE DETUNING IN SUPERCONDUCTING RF CAVITIES

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The Lorentz force can dynamically detune pulsed Superconducting RF cavities. Considerable additional RF power can be required to maintain the accelerating gradient if no effort is made to compensate for this detuning. An adaptive feed-forward Lorentz Force Detuning (LFD) compensation algorithm developed at Fermilab is described. Systems based on this approach have been used to successfully reduce LFD from several hundred Hz to several 10s of Hz or better.

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