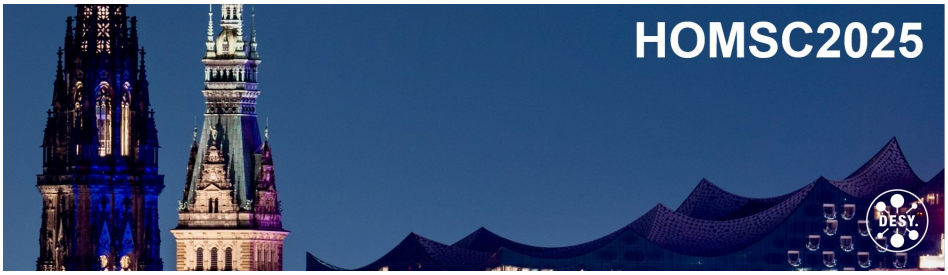


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# High-Order Mode Damping Strategies for FCC-ee Superconducting Cavities

*Monday 6 October 2025 11:30 (30 minutes)*

High-order mode (HOM) damping is a critical aspect of ensuring beam stability and operational reliability in the future circular collider (FCC-ee). The FCC-ee RF system must accommodate a wide range of beam parameters, covering working points from the Z energy level, with Ampere-level beam currents, up to the tt energy, with a total RF voltage of 11.3 GV. This presentation will discuss the HOM damping strategies developed for the FCC-ee superconducting cavities. For the 2-cell 400 MHz cavities used at collider working points, the damping scheme is designed to strongly suppress HOMs and extract kilowatts of HOM power, which is particularly crucial at the Z working point. This is achieved through a combination of coaxial HOM couplers and beamline absorbers (BLA). For tt operation and the booster, the smaller beam currents allow the use of 6-cell 800 MHz cavities with a damping strategy comprised of coaxial couplers and BLAs. The presentation will cover the FCC-ee RF system baseline, the damping strategy for each working point, sensitivity analysis of the cavities, and the current challenges in the design.

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