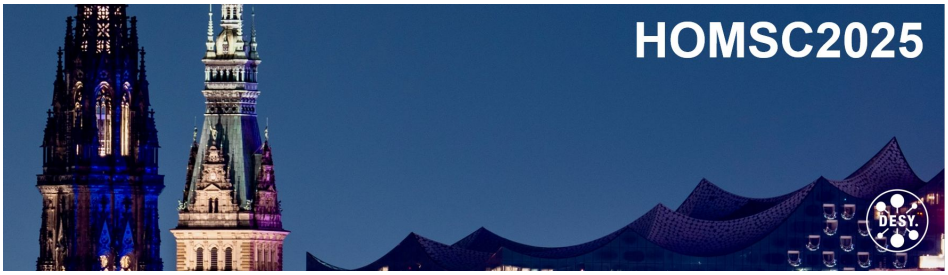

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CW operation characteristics of the spare Eu-XFEL third harmonic cryomodule

Wednesday 8 October 2025 11:30 (30 minutes)

The study investigated the continuous-wave (CW) performance of the spare 3.9 GHz third harmonic cryomodule for the European XFEL. While pulse mode operation exceeded specifications with high accelerating gradients, CW tests revealed strong limitations. The main issue was overheating of the first HOM coupler. Additional challenges included tuner backlash and mechanical resonances at 18.6 Hz affecting LLRF stability. The results indicate that, although well suited for pulsed operation, the cryomodule requires design modifications to HOM couplers to achieve reliable CW performance.

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