

Piezo characterization, tests and operation at FLASH

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The superconducting cavities operated at high Q level need to be precisely tuned to the RF frequency. The TESLA cavities at FLASH accelerator are tuned using slow (step motors tuners) and fast (piezo tuners) driven by the control system. The goal of this control system is to keep the detuning of the cavity as close to zero as possible even in the presence of disturbing effects (Lorentz force detuning and microphonics). The fast frequency tuner makes use of a pair of multilayer piezoelectric (piezo) actuators to drive its fast detuning compensation action.

The presentation covers the discussion on piezo operating environment and parameters (the choice of unipolar or bipolar mode of operation), the piezo's parameters important for the control system, piezos characterization and long term test results. The piezo operation at FLASH will be also reported.

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