

**Operational Aspects of the RF Control System for the TESLA Test Facility,** K. REHLICH, T. SCHILCHER, S.N. SIMROCK<sup>\*</sup>, DESY - The operation of multiple high gradient srf cavities driven by a single klystron is a challenging task. This is due to severe Lorentz force detuning, microphonics, power limitations, and parameter variations. Simulation results of power requirements with realistic distributions of loaded Q, Lorentz force detuning constant, mechanical time constant of the cavity, phase and amplitude of incident wave, and phase and gradient errors for vector sum are given. The microphonics modulate the detuning at the begin of the pulse and thereby increase the power requirements. The algorithm for tuner control is based on detuning angle information during each pulse. The fully digital rf control system assists the operator in the calibration of the vector sum, optimization of feedback gains, and generation of feed forward tables. The goal is to minimize the power needed for control but also to maximize performance and robustness of the system. Extensive diagnostics allow to observe performance of individual cavities. Issues such as operation of cavities at different gradients, and by-passing of cavities are also discussed.

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