Joint DESY and University of Hamburg Accelerator Physics Seminar

Tuesday, August 8, 2006

(16:00 in Room 459/30b)

High Precision SC Cavity Alignment Diagnostics with HOM Measurements

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SLAC

Abstract

Experiments at the Flash at DESY have demonstrated that the Higher Order Modes induced in superconducting cavities can be used to provide a variety of beam and cavity diagnostics. The centres of the cavities can be determined from the beam orbit that produces minimum power in the dipole HOM modes. The phase and amplitude of the dipole modes can be used as a high resolution beam position monitor, and the phase of the monopole modes to measure the beam phase relative to the accelerator RF. For most SC accelerators, the existing HOM couplers provide the necessary signals, and the downmix and digitizing electronics are straightforward, similar to those for a conventional BPM.

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