Joint DESY and University of Hamburg Accelerator Physics Seminar

Tuesday, January 26-th, 2010

(16:00 in Room 459/30b)

Slice Emittance Measurements at PITZ
Using an Energy Chirped Beam in a Dispersive Section

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Abstract

The PITZ facility is aimed for photo injector optimization. The main goal of the optimization is to minimize the electron beam projected transverse emittance. One of the variable parameters is the cathode laser longitudinal shape. The laser system at PITZ has the flexibility to produce different longitudinal shapes. The projected emittance expresses an integral value over a bunch length. Slice emittance diagnostics allows to measure transverse emittance of a certain longitudinal fraction of the beam. One of the ways to study slice emittances at PITZ is to operate the booster cavity off–crest and use a dispersive section afterwards. In the booster a particle's longitudinal position within a bunch is correlated to the particle's momentum. The dipole with a slit sorts out the particles that are used for an emittance measurement. With the help of this diagnostics one can correlate the slice emittance with the laser pulse structure and find relative orientation of the slice phase volumes. This talk presents the setup description and the recent results of the commissioning.

J.Roßbach (Univ. HH) and M.Vogt (MPY).

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