Joint DESY and University of Hamburg Accelerator Physics Seminar

Wednesday, November 16, 2005

(11:00 in Room 459/30b)

Multibunch Instabilities and Cures at the SLS

Micha Dehler

Paul Scherrer Institut

Abstract

An important ingredient for modern synchrotron light facilities are active feedback systems stabilizing the bunch trajectories within fractions of their dimensions. Apart from orbit control, planning for the Swiss Light Source included already from the beginning a multi bunch feedback system to suppress coupled bunch instabilities.

The system, currently in the commissioning state, is a high bandwidth bunch–by–bunch system correcting individually the positions of the 480 bunches in the SLS storage ring, spaced by 2 ns. The analog position signals from button based BPM combined with a basic RF front end get digitized in newly developed 500 MS/sec Analog–to–Digital Converters. After demultiplexing, 24 Digital Signal Processors per plane compute correction kicks, which get reconverted into an analog signal by a second in house development, a fast 500 MS/sec Digital-to-Analog Converter. Stripline kickers for the transverse planes, respectively a heavily coupled cavity kicker, are used to act back on the beam.

The talk will present the current situation concerning instabilities at the Swiss Light Source. The components of the multi bunch feedback system are described and the current state and performance of the systems will be given.

NOTE THE UNUSUAL DATE AND TIME

D.P.Barber (MPY), J.Rossbach (Univ. HH) and M.Vogt (MPY).

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