

Course Preparatory Reading Material

General

R. Hettel, "Beam Stability at Light Sources", Rev. Sci. Instr. 73, 3, 1396

Accelerator physics:

H. Wiedemann, "Particle Accelerator Physics I", Sections 5.4 - 5.7 Phase space, betatron functions, dispersion

H. Wiedemann, "Particle Accelerator Physics II", Chapter 7 "Synchrotron Radiation"

(Matt Sands, "The physics of electron storage rings", SLAC-121, UC-28 is a good albeit dated introduction to storage rings, geared towards $e^+ e^-$ colliders, which were cutting edge in the early 1970's.)

Pickup Electrodes:

-Introductory

Raphael Littauer, "Beam Instrumentation", Section II, "Signal Pickups", AIP 105, 897-909

-Advanced (for those that really want to understand these things)

D.A. Goldberg, Glen Lambertson, "Dynamic devices - A primer on pickups and kickers", AIP 249 pp. 537-600

BPM's

A classic:

Robert Shafer, "Beam position monitoring", AIP 249 pp. 601-636

- Late 1980's technology:

F. Wells, AM/PM PAC '89?

-A modern overview:

G. Vismara, "The comparison of signal processing systems for beam position monitors", proceedings of DIPAC '99

Beamlines:

Erik Johnson, Steve Hulbert, Lonny Berman, "Beamlines at Synchrotron Radiation Facilities: The link between the user and the machine", AIP 249 pp. 859 - 911

Noise sources:

Very interesting, almost enough material for a class by itself:

Gerry Fischer, “Ground motion and its effects in accelerator design”, AIP 153, pp. 1047-1119

Sampling theory & application

G. Decker, “Introduction to the Measurement of Noise with Application to Particle Accelerator Beam Stabilization”, Advanced Photon Source light source note LS-273

<http://www.aps.anl.gov/techpub/lnotes/ls273/ls273.pdf>

Ivan Linscott, “Fundamentals of Digital Signal Processing in beam diagnostics:

A review of DSP formalism, algorithms and networks”, Proceedings of the 2000 Beam Instrumentation Workshop, Cambridge, MA, AIP 546, pp. 61-82

Feedback

John Carwardine, Frank Lenkszus, “Real time orbit feedback at the APS”, Proceedings of the 1998 Beam Instrumentation Workshop,

<http://www.slac.stanford.edu/pubs/confproc/biw98/carwardine.pdf>

Coupled bunch etc.

John Fox et al, “Feedback Control of Coupled-Bunch Instabilities”, PAC93

http://accelconf.web.cern.ch/AccelConf/p93/PDF/PAC1993_2076.PDF

J. Fox et al, “Observation, Control and Modal Analysis of Coupled-bunch Longitudinal Instabilities”, EPAC 96

<http://accelconf.web.cern.ch/AccelConf/e96/PAPERS/ORALS/WEO05A.PDF>

Note, an expanded version of Fox’s EPAC paper is in the BIW 96 proceedings, probably the same as slac-pub-7292:

“Observation, Control and Modal Analysis of Longitudinal Coupled-Bunch Instabilities in the ALS via a Digital Feedback System”,

<http://www.slac.stanford.edu/pubs/slacpubs/7250/slac-pub-7292.pdf>