

Discussion Outline for
SRI 2001 Workshop #2 on Beam Stability
to Be Held Friday Afternoon, 24 August 2001

1. Introduction: Goals/Charter
 - a. Get accelerator, controls, operations, beamline, and user groups working together to advance scientific research by improving (beam) stability of existing sources.
 - b. Format: This is a workshop, not a series of prepared talks.
 - c. Briefly introduce ring parameters (as examples of variables that need to be controlled; in principle, there would also be a list from optics/instrumentation) - discussed more fully in §3.b.
 - d. Identify
 - i. Consensus issues
 - ii. High Priority Tasks
 - e. Foster
 - i. Inter-lab communications
 - ii. Connections to other forums (e.g. Performance Issues Workshop series)
 - iii. Followup activities
 - f. Provide transcript
2. Science-Based Requirements - User Perspectives
 - a. Science enabled
 - b. Metrics
 - i. Intensity variations (incl. beam current at APS)
 - ii. Photon energy
 - (1) Shifts
 - (2) Resolution
 - iii. Time scales
 - (1) Frequencies (IR)
 - (2) Integration times
 - iv. Imaging
 - (1) Experimental phase-space acceptance
 - (2) Stability
 - (a) Positional
 - (b) Size
 - v. Polarization
 - vi. What is current state-of-the-art
 - c. What improvement(s) would have qualitative/quantitative impact?
 - d. High-leverage stability experiments
3. Moving Upstream
 - a. Translation to beam parameters & optical instrumentation
 - b. Variations/Spread of (Ring) Parameters
 - i. Steering accuracy
 - (1) $\delta x / \delta y$
 - (2) $\delta x' / \delta y'$
 - (3) e^- trajectory in ID's

- ii. Focusing (beam size) control
 - (1) σ_x / σ_y
 - (2) $\sigma_{x'} / \sigma_{y'}$
 - iii. Coupling (beam rotation)
 - iv. $\delta z / \delta \epsilon$ and $\sigma_z / \sigma_\epsilon$
 - c. Also a (different) list for beamline sensitivities
- 4. Tools of the Trade
 - a. How does one diagnose?
 - b. How does one translate?
 - i. Optical ray-tracing programs - User to beam parameters
 - c. How does one actively cure?
 - d. Driving-term management or passive cure? (fixes for the root-causes of problems)
- 5. User-Machine Interface (work-arounds when the driving terms not identified/fixed)
 - a. (Local) User/beamline feedback to source (beam)
 - b. Adaptive optics
- 6. Closeout
 - a. Summation
 - b. Consensus issues
 - c. Continuing interactions
 - d. Future activities
 - i. Next meeting?
 - ii. Performance Issues Workshop