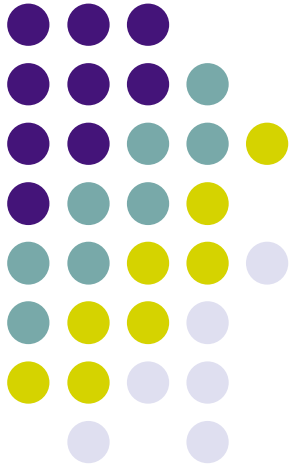
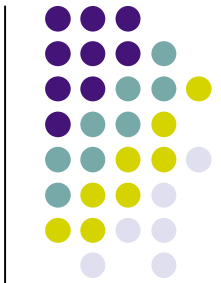
Beam Test Suggestions

KEKB MAC

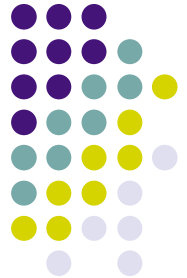


Tune Measurements



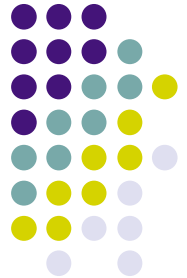
- Measure the tune variation around the nominal bunch parameters
  - Modify script used for BPM Gain Calibration to read tune at every point on the mesh
    - Measure present optics and plot 3-D contours of amplitude-dependent tune
    - Measure worst sextupole configuration from “bungee jump” and compare tune contours to present optics
  - Modify script used for Dispersion measurements to read tune at nominal energy and both positive and negative energy offsets
    - Measure present optics and plot chromaticity with parabolic fit

Bunch Length Changes



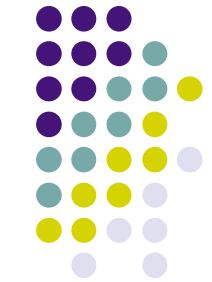
- Try and evaluate whether the ratio of bunch length to ßy is an important factor
  - Measure luminosity while increasing HER bunch length by decreasing accelerating voltage
  - Estimate improvement/deterioration in luminosity from an increase of ßy in LER to equal or greater than the bunch length
  - Determine whether it is worth trying to decrease bunch length in LER (how?)

Scraper Measurements



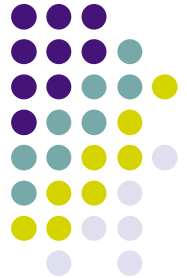
- Try and determine the mechanism for beam loss
  - Use scrapers at high ß points and high dispersion points to examine beam loss mechanism during luminosity runs
  - Try and separate horizontal, vertical and energy losses

Modify SIMPLEX Algorithm



- Mesh may shrink too fast so algorithm does not examine large phase space volume
  - If no better solution is found by reflecting the worst vertex, instead of shrinking the mesh, move to next-worst vertex
  - If reflecting next-worst vertex finds better solution, return to worst vertex
  - If no better solution is found, move to next-worst vertex
  - When all vertexes have been tried with no success, shrink the mesh

Evaluate gases desorbed from Crab Cavities



- Add RGA to Crab Cavity vacuum pumps
- Look at gas composition during RF conditioning
- If gas is Helium, there is an internal leak
  - ~80K warm up may improve
    - Much faster than warming to room temperature
  - If gas is oxygen, nitrogen, then leak is external or virtual and may contain water
    - Requires warming to room temperature