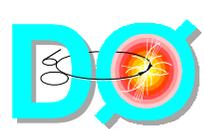


Update on Beam Spot Monitoring & Feedback

Yi Dai

STT Meeting

September 15, 2000



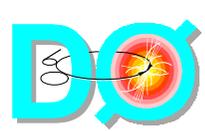
Basic Idea:

- To achieve the best beam position stability
 - ◆ Beam spot size
 - ~30microns
 - ◆ Primary vertex reconstruction resolution:
 - a few 10microns
 - ◆ Correction dipole accuracy
 - ~10microns
- To minimize the complexity
 - ◆ Database storage
 - To avoid frequent redundant entries
 - ◆ Communication and control traffic
 - Fastest ACNET communication: < 1Hz
- To have a responsive system
 - ◆ Efficient primary vertex reconstruction
 - Once every a few minutes(?)
 - ◆ Correction dipole reaction time
 - Better than one step every a few minutes(?)



Planned Procedures:

- **Beam Position Calibration**
 - ◆ To provide the "static" parameters
 - ◆ Done for each store of beam
 - ◆ Stored in the online database
- **Beam Parameter Downloading**
 - ◆ At the beginning of each run
 - ◆ To be used as L2STT triggering parameters
- **Beam Position Monitoring and Feedback**
 - ◆ Continuous beam position monitoring - EXAMINE
 - For daily shifters
 - For accelerator control people
 - ◆ Feedback triggered when deviations exceed thresholds
 - To ACNET dipoles for correction
 - ◆ New beam parameters will be entered into database after feedback correction
 - To Updated beam parameters
 - For later-on beam history study



Expected Performance:

- **Beam Position Control Stability**
 - ◆ **Overall beam stability:**
 - ~100 microns (in positions)
 - ◆ **Feedback control accuracy:**
 - ~10 microns
- **Responsiveness**
 - ◆ **A few minutes for each feedback correction**
 - Mainly limited by EXAMINE and ACNET front-end (correction dipoles) reaction time