InterCAT Technical Working Group Meeting
March 16, 2000

Mark Beno presided. Steve Davey announced that HazMat training for guest users is scheduled for April 6, 2000, at 9:00 a.m.

Modifications for X-ray BPMs: (Glen Decker)
Glen Decker spoke about the issue of ring modifications to reduce the interference of BM radiation with the ID x-ray BPMs. The idea is to reduce BM radiation leaking into the ID beam path (and thus X-ray BPMs) by reducing the BM dipole field strength and thus the resultant deflection from 78 to 77mrad, with existing corrector magnets providing the additional deflection required to send the beam through the ID's along the desired path. This requires either moving all of the installed ID beamlines, or moving the accelerator, the latter of which they've chosen. He illustrated the significant improvement gained from modifying sector 34 by comparing it to sector 1.

Some other points raised:
- The changes will result in a BM source shift of 6.36mm, and an angular change of 298microradians
- The short-term goal is improved DC pointing stability, and the long-term goal is to use the X-ray BPMS to provide improved real-time feedback .
- Residual corrector magnet radiation could be used for diagnostics; The additional steering function can be added to their existing functions (power supplies have additional capacity).
- Most BM lines will be able to continue without changes, essentially using a slightly different portion of the 6 mrad BM fan. The APS is working with the others to explore the options.
- The next step is to make the modifications to sector 33. The long-term schedule isn't set.
- The effect on Bremstrahlung radiation has been considered, and ray tracing indicates there is no problem.
- The goal is 1/20 microrad stability.
- Use in open-gap situations is more difficult and requires more experience to improve results.

Refer to Decker et al, PRB: Special Topics, vol. 2, 11280, 1999.

Top off issues: (Bob Fischetti)
Bob Fischetti of Bio-CAT showed some results using a quad photodiode with a simple set up using no mirrors or focusing to look at the vertical intensity and position during top-off. Intensity dropped very briefly to 0, and recovered within the 30msec period specified for the injection. Vertical position was very stable. He mentioned some horizontal motion but did not show results.

Slew scans at 120 msec/pt resulted in ~5% deviation for a single point, which normalized out. Scans at 10 msec/pt showed effects ~10% that mostly normalized out.

Rukri Sanishvili of SBC-CAT described diffraction experiments on lysozyme crystals, with the result that for the simple experiments they tried, there was no significant effect due to top-off. This was not a particularly demanding experiment.

Anneli Munkholm of BESSRC-CAT presented results showing the effect of top-off on Real-time scattering experiments. The conclusion was that top-off can be dealt with for present experiments, w/ time scales of ~ 1 sec/pt. Concerns are for planned experiments with time scales of ~1 msec/pt. Questions are: Will injection glitches cause lost data? Will poorer lifetimes be associated w/ increased rapid beam fluctuations that will interfere with experiments?

Some additional points raised:

- It appears that experiments depending on vertical beam stability will suffer little impact. It was pointed out that not everyone has vertical monochromators.
- It was pointed out that even though a small percentage of users may be affected, the experiments affected would tend to be more difficult and important experiments. The point was made that information of this type is needed to determine whether these issues can be handled by scheduling SOMs.
- The issue of a more precise countdown timer was raised. It was stated that an epics variable w/ greater precision is not possible, due to the 2 Hz injection rate. An alarm signal could be used, but is not useful for everyone. Mohan's module could be used to provide a hardware signal.