

Homework for June ADI, on 10Hz Low Ecm operation (at full current 2640 bunches)

4-june-2010

Definitions:

- e+ production pulse refers to the electron pulse (150GeV) that is used to make positrons.
- lumi production pulse refers to the electron pulse (100-150GeV) that is used for collisions at the IP.

e- source (Axel)

1. Please confirm OK status of doubling rep. rate of e- system, gun through DR injection.

e+ source (Jim)

1. Estimate increase power load on target of 10Hz operation, and consider impact on
 - a. Target survivability
 - b. Scenarios for dumping the produced pairs from the lumi production pulse, including activation. (Note that solutions that avoid pulsing the capture magnet/RF sections at 10Hz should be considered).

DRs (Susanna/Mark)

1. Evaluate 10Hz option for the 6km ring, including cost and e-cloud
2. Review 4x3km rings possibility in a single tunnel (Also PHG & CFS)
 - a. 3 rings if kicker spec. is achieved for e- ring (other instability problems?)
3. At 10Hz, the e+ ring will be run at a 50% duty cycle, with beam in the ring for only 100ms, and then empty for next 100ms:
 - a. What are the implications of thermal stability of the vacuum systems and magnets
 - b. What are the issues with the beam loading in the SCRF? How will we handle the LLRF? Are there issues with instabilities during the transient fill?

Bunch Compressor (Nikolai)

1. Please confirm OK status of doubling rep. rate of e- BC system

ML (Akira et al)

1. Cross-check presented AC power scaling for 10MBK setup (scaling laws)
2. Confirm AC power scaling law for Marx Modulator
3. Estimate DRFS AC power scaling for lower forward power and estimate maximum rep. rate.
4. Review impact on water-cooling for both HLRF solutions.

5. What additional services (cost) are required to allow 10Hz operation for Ebeam<150 GeV.

BDS/MDI (Andrei, also for Jim)

1. Consider how best to dump e+ production e- pulse:
 - a. Separate standalone dump (~5MW), location? Infrastructure? Cost?
 - b. Using existing e+ Main Dump (from opposite end) – additional beamline.

Simulations (Kiyoshi)

1. Review existing simulations. What remains to be done? What can you do before June meeting?

Other (CFS/Global?)

1. Overall timing issues (Ewan)
2. For CFS, cost-relevant information missing or requiring further information (Vic)

Cost (Peter)

1. Prepare initial cost increment based on items indicated on EXCEL summary sheet
2. What additional cost items are missing?