

Plan for booster collimations (Dec2015-summer2016)

1/Dec/2015

Valery Kapin, Rick Tesarek, Todd Sullivan, Salah Chaurize, Matt Slabaugh, et al.

1. Install Primary collimators (includes alignment) by mid. Dec/2015

Status: All parts are fabricated; Ver. Primary is assembled with Al foil ~0.016" and

alignment will be finished this week; Horiz. Primary (with old Cu foil) in vacuum and it will be reassembled with new foil on place

When: Shutdown during the upcoming RF-cav. installation; breaking vacuum in sector 5 to install both V & H prim. - *require additional vacuum crew!*

2. Secondary collimator motion summer 2016 shutdown

Status: ready for beam tests and looks more reliable after speed optimization and reducing backlash

Plans: check/change lubricants in gear boxes (details by Matt)

3. Commissioning FLM (fast loss monitor) by mid. Dec.2015

Status: Detectors installed and timed in at BES; Clip lines ready to install (clip lines reduce signal width & improve double pulse resolution); ACNET variables defined (including FLM diagnostics); *Drawback* - one detector module oriented incorrectly.

Plans: during shutdown install cliplines & rotate FLM at 6B to proper orientation; add ACNET variables to Lumberjack.

4. Simulations for optimal collimator setup by mid. Dec.2015

Status: simulation code (MADX+MARS-coll. models) including scattering on Prim. colls & out-scattering on Sec.colls is ready and tested for several parameters (see Booster-2015); BTW, it is also ready for Notch-Absorber simulations (model: original NA w/o insert)

Plans: Start from original 2004 Drozdin's design and finding modified (more suitable) layout. Purpose - to understand which sec. coll associates with each primary (V or H), i.e. define which side of beam touches prim. and sec. coll. Prepare "cartoons" related coll. layouts with ACNET coordinates to easy exp. works.

5. Beam study to optimize VERTICAL 2-stage collimation. from mid. Dec.2015

Status: a detailed plan of sequent actions for collimators setup is ready

5a. similar for HORIZONTAL 2-stage collimation.

from Jan. 2016

6. Understanding feasibility & restrictions for booster collimations ~ 2016

- a) develop semi-analytical model (with comp-algebra) for calculations of collimation efficiency;
- b) compare data with numerical simulations at different sigmas, halo, sec. gaps, apertures, etc.;
- c) review of existing synchrotrons (J-PARC, SNS, ISIS) & simulations for projects (SIS100 GSI);
- d) workout alternative solutions (incl. optimization of 1-stage; Lebedev's "septum"), if 2-stage failing

7. Compare exp. data with simulations for "realistic" beam & lattice ~2016-17

"realistic" means full (not halo only) beam; nonlin. lattice with space-charge; full MARS simulations