

V.Kapin: Telework summary (16Mar-30Jun 2020) 1 of 2

0) General activity - due to telework, COVID, supplementary (not my subjects)

0.0 Home working place (my PC support; FNAL VPN; ZOOM usage; e-mail Thunderbird + MFA, cell-phone & MFA e-mails);

0.1 FNAL COVID info; Everbridge; FTL upgrade; Site Access Instr.; Director & AD all-hands; PS-safety; Safety training; PerfRev.

0.2 Sci meetings: APT seminars; JTF/PS; US-Japan "Linac"; virtual IPAC'20 (bad BPM!); Jeff's "Lattice", "Q-bumps"

1) IPM daily measurements (1 week) and ACL script by B.Hendricks (03/17-05/08)

1.1 two daily IPM meas. via LabView w/ Remote Desktop from my FNAL/home offices, fill and submit Excel file.

1.2 ACL script for "automatic" IPM measurements written by B.H. (we had 2 meetings to defined ACL code structure to meet my requirements; initial version (tested, learned) -> modified (added output var to CSV-file); tested (debugged) w/o settings during shutdown (comparison with LabView, notes); **status: waiting for beam**

2) MADX simulations for new D-magnet at extraction area L02-L03 (03/16-05/15)

Task: reproduce existing trajectories near extraction are (100 turns before and at the last "full" turn)

MADX matching for VARY=Vkicks (Correctors) & CONSTRAINTS Y-BPM(meas) in L01-L04;

V-Kicks {known $\alpha=f(I)$ } & 3 BEX {unknown $\alpha=f(I)$ }. Try at several BEX levels; **Results: too high V-kicks (out spec.)**

Looks upstream BPML03 = bad!; comparison $I[A, MADX]$ with $I[A, ACNET]$ at several BPMs -> perfect !)

=> New matching approach with $\alpha=vkicks$ and I-corr [$\alpha=f(I)$]: VARY= vkicks; CONSTRAINTS=y(BPM) & I(ACNET)

status: wait for systematic w/ full-ring traj. to match both BPM meas & ACNET I[A]-correctors (bad BPMs!)

3) New Booster Collimation Unit in Long 8 (3/24 -6/30)

3 talks: preliminary (05/21); at PDR (05/29); at TaskForce (06/04)

Discussions & info on new collimation unit: beam parameters, scraping rates

Learn and comment Long8 location relatively BTE via drawing (for shielding assessment) ;

Review previous reports, prepare new presentations

New task: **ensure redistribution losses** between existing (L06-L07) & new (L08) collimators (**learn C.O.!**)

status: PDR – successful; need to answer reviewers questions; formulate tasks for additional simulations

4) New problem (not approved) - understanding and simulating Booster C.O.

Simulate Booster C.O. (learn possible manipulations) - for 3 my subjects: collimators (how make orbit bumps at close turns in L06-L08); extraction (reproduce trajectories); IPMs (L04) – verify C.O. measurements

Presently only old B38 C.O. (@ collimator studies) available; **dedicated C.O. learn& studies after shutdown**

5) Simulations for RIL (discussion with Kiyomi 06/30, to be started in July)

- a) (PARMILA) - new collimator in LEBT (vary emittance); b) CST simul. 4-rod RFQ collimated emittance;
- c) new settings for MEBT quadrupoles – try after shutdown; d) MEBT with new collimator at DTL entry

6) CST based simulations for IPM to verify Shiltsev's formulae (postponed)

Shiltsev's formulae could be included in external post-processing code after auto ACL (not B78, not LabView)