What next?

E-coolers and e-lenses simulations - joint BE-ABP / BE-BI meeting

- Motivations: communication – synergy – coordination.

The idea would be to 'take a picture' of the present (or past) work, the tools used and results obtained, see if there is any synergy and help from other's work, make sure we are not duplicating job in the simulations of e-coolers and e-lenses, and generally see where we need to work together.

I have the impression that the exercise was very useful

Many areas in which we can profit by a stronger collaboration

E-coolers and e-lenses simulations - joint BE-ABP / BE-BI meeting

Points raised during the meeting:

- E-cooling operation with H- *G. Tranquille*
- Hollow beams experience (simulations?)
- New AD cooler

- Potentials for e-cooler (e-lenses) effect simulations with RF-track (e.g. hollow beams) *A. Latina*
- Experimental conditions uncertainties
- Changes needed for e-lenses

E-coolers and e-lenses simulations - joint BE-ABP / BE-BI meeting

Points raised during the meeting:

- Exp. (and simulations!?) on impact of gun parameters (Wehnelt bias) *A. Pikin*
- Gun simulations form LEIR?

- Diagnostics in and around e-coolers (AD, ELENA…) *L. Jorgensen*
- Operational tools
- **AD issues!**
  - Power cut magnetization?
    - Orbit change
  - Strange charging or …? Beamloss!
  - … Magnetic field quality????

E-coolers and e-lenses simulations - joint BE-ABP / BE-BI meeting

Points raised during the meeting:

- Limited time for MD in ELENA/AD *D. Gamba*
- Again, diagnostics and tools/controls
- Working well, but full optimization to be done
- H-/p source, limited emittance meas. capabilities…

- Measurements in LEIR to be shown & discussed!

E-coolers and e-lenses simulations - joint BE-ABP / BE-BI meeting

Points raised during the meeting:

- Electron beam instabilities *A. Rossi*
- E- beam simulation tools (CST studio…)
- Imperfections, electronic noise
- Tolerances from the proton beam (magnetic field axis tolerance…)
- More diagnostics?

E-coolers and e-lenses simulations - joint BE-ABP / BE-BI meeting

Points raised during the meeting:

- Gun imperfections vs. simulation imperfections — *S. Sadovich*
- Distortions/instabilities
- CERN Test stand

- To be added… — *D. Mirarchi*

Indeed it looks like it's a good idea to meet again

Proposal: structure regular meetings (working group format?)

Adriana and myself will work on the organizational details with the help of Rhodri and Gianluigi - Any input welcome

We'll present and discuss them at the next meeting, before the technical part.

E-coolers and e-lenses simulations - joint BE-ABP / BE-BI meeting

Potential technical issues for presentations/discussions:

E-cooling

- Further benchmarks for e-cooling module in RFtrack (vs. Beta-cool - different regimes)
- Further steps for ELENA full e-cooling commissioning and operation
- Possible help from ABP for AD e-cooler consolidation/new cooler?
- Measurements in LEIR

E-lenses – points from Adriana >

What next

- Finalise geometry of HEL (= angle of gun pipe w.r.t. LHC pipe + placement and strength of correctors) to make sure we can steer the e-beam (±4mm) to overlap the proton beam. Need of additional coils? (work with EN-MME)
- Check aperture restrictions at 450GeV operations and find a fall back solution
- Check effect of imperfections: gun misalignment, magnetic field imperfections, others (values of imperfections to be defined, EN-MME)
- E-beam at collector:
  - Simulations after the end of the main solenoid: do we need a magnet around the collector?
  - Establish electron distribution and impact energy at collector to calculate vacuum pressure and check sufficient pumping is provided
- Effect of electronic noise on electron beam quality?
- Effect of e-beam asymmetries between injection and extraction line
- . . . HEL specifications
  - Maximum tolerated field in the centre of the hollow e-beam
  - Maximum tolerated distortion of e-beam
  - Maximum mis-alignment proton-electron beams
  - Maximum tolerated noise on e-beam (intensity, other?)

Any suggestion or comment?

(In case, I'll add them to this slides on INDICO after the meeting for documentation)