

Minutes of [8th HP-PS design meeting](#) for LAGUNA-LBNO, 19Feb2013

Present: Fanouria Antoniou (FA), Christos Lazaridis (CL), Rende Steerenberg (RS), Androula Alekou (AA), Yannis Papaphilippou (YP), Ilias Efthymiopoulos (IE)

For the general meeting in Hamburg, there will be three presentations in the afternoon:

- a) HP-PS Design considerations and parameters (**RS**)
- b) HP-PS Ring Optics (**FA**)
- c) Beam Transfer Lines for CN2PY and HP-PS (**AP**)

RS mentioned we will have a summer student for 10 weeks that will be paid by the BE department.

Update on the Optics and machine layout

Speaker: FA ([presentation](#))

FA sent an email with magnet parameters and plots (11Feb2013). A new working point is shown in the presentation (Q_x changed from 13.18 to 13.24 and Q_y changed from 7.08 to 7.21). We will stay at 250 ns (kicker rise time) and we will have 10 empty buckets. **FA** presented the optics parameters and calculated the tune shift (H and V) while scanning the emittances for 50 and 75 GeV. **YP** explained this is pessimistic as gaussian beams were considered, whereas with the real space charge tune shift we can go down to 10 mm.mrad (what is shown in **FA**'s presentation is the largest emittance, the upper limit). Although the number of particles is reduced in the HE option, the power is the same (as a result of the increase in energy). Primary collimators can be put at 3σ , and secondary collimators at 4σ . The estimations should firstly be done by first taking into account the space charge and later on from the collimation point of view. **FA** showed the maximum aperture (horizontal and vertical) and presented a summary table.

Next steps and preparation of LAGUNA-LBNO general meeting

RS explained that although there is a lot of 200 MHz technology, it is difficult to have 200 MHz system where we can change the frequency rapidly as beta changes during acceleration. Additionally, this would make the HP-PS incompatible for the LHC filling. A 10 MHz system would result in bunches with high peak cavities (which is bad from instabilities point of view). It was decided we will work with 40 MHz cavities since the study for this frequency has already been undertaken for PS2, and in addition they do not have these negative aspects of 200 and 10 MHz.

YP mentioned that for NC magnets we have to stay below 1.7 T, since for ≥ 1.8 T huge imperfections occur. He suggested we lengthen the magnets; the quadrupole in the centre of the arc is the most demanding magnet (at that location there are dispersion peaks, and beam excursion will occur). **RS** explained that in the inj/extr region we need enlarged magnets. **AP** said that 70-100 mm aperture is needed (diameter).

YP mentioned we need iteration in RF parameters and that the bunch length could be larger. Some margin could be gained, maybe we could even paint longitudinally.

RS suggested we invite Louca Bottura for the next meeting (meeting could be prolonged by ~30 minutes), so that he can make a presentation on the magnets. We can provide him the ring and magnet requirements.

Next meeting: 6th March 2013