T. Markiewicz, Jun 22, 2012

**Preamble**

It is a fact that CERN has not yet decided which hardware upgrades to the LHC and its injector complex projects will be needed, when they might be needed, or what the detailed specifications for the new hardware will be. The final focusing triplet quad aperture and length have yet to be decided. The type of crab cavity to be used is undecided. Whether or not to install a feedback system in the SPS to augment the baseline plan of a coated vacuum system is undecided, much less the technical specifications of a kicker, pickup and DAQ system.

In the area of collimation, during LS1, it is planned to replace the tertiary W collimators in all IRs with similar collimators that have integrated BPMs. All other decisions on improvements to the collimation system will be taken after it is seen how the LHC performs post LS1. The list of possible enhancements to the collimation system includes extra collimators in the dispersion suppressors, with or without 11T dipoles, around the interaction points and/or the IR3 and IR7 collimation regions. Depending on radiation aging, impedance, metallic secondary collimators might be installed. These may be made with the manufactured composite metals (Cu-Diamond, Mo-Graphite, ..) being investigated by CERN or made with elemental copper using the SLAC design. They will include BPMs if the so-equipped TCTs are seen to provide operational or benefits. The collimation system performance will depend on the required apertures, which will speak to impedance, which will depend on orbit stability and the lattice. Which hardware is installed during LS2 and which during LS3 is still an open question.

What is important to the LHC, CERN and to LARP is that LARP remain deeply involved, as it is, in all these areas of R&D, and be ready, when a definite direction is clearly indicated, to transition to a more project oriented organization.

**Status**

A complete “Rotatable Collimator” as a candidate for a metallic secondary collimator was completed by SLAC in April 2011. Initial tests

**Schedule**

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