High Energy
High Intensity
Hadron Beams

APD
Accelerator Physics and synchrotron Design

CARE-HHH-APD Workshop
'Scenarios for the LHC luminosity upgrade' (LHC-LUMI-05)
Arcidosso (Italy), 31 August–3 September 2005

The workshop LHC-LUMI-05 will be devoted to beam dynamics aspects of the LHC Interaction Region upgrade and to high energy injectors. In particular the goal is to compare optical designs and luminosity performance for alternative IR layouts, and to define machine and magnet parameters for the injectors.

For the IR optics we would like to narrow down the choice for IR magnet locations, length, aperture, gradients, and field quality and discuss chromaticity correction and minimum β^* for each of the following options:

- quadrupole first (Nb-Ti or Ni_3Sn)
- dipole first
- ironless magnet at very low β^* embedded in the experiment.

Other aspects to be addressed for each option are relative merits or drawbacks for beam-beam compensation schemes and machine experiment interface (in addition to heat deposition and magnet quench limits that will be further discussed in a LARP mini-workshop at Fermilab).

New high energy injectors can substantially increase the peak and integrated LHC luminosity. We will discuss design optimization of fast super-conducting synchrotrons and compare alternative scenarios, such as a new booster in the ISR tunnel, a 1 TeV super-SPS with new transfer lines, or a booster ring in the LHC tunnel, and address the following aspects:

- lattice
- magnet aperture
- injection and extraction

The work will be organised in plenary morning sessions supported by afternoon sessions of two parallel working groups on 'LHC IR Upgrade' and 'High Energy Injectors'. The latter will provide input for a technological follow-up at a subsequent CARE-HHH-AMT workshop (ECOMAG-05, Frascati, 24–28 October 2005).

It is our pleasure to invite you to participate to the success of the workshop by contributing to the activities of the working groups and to the discussion in the plenary sessions. Please contact us to obtain more information, confirm your participation, and discuss about your contribution.

Francesco Ruggiero
Francesco.Ruggiero@cern.ch

Walter Scandale
Walter.Scandale@cern.ch

Frank Zimmermann
Frank.Zimmermann@cern.ch