



**High Energy**  
**High Intensity**  
**Hadron Beams**

**APD**  
**Accelerator Physics and**  
**synchrotron Design**

**CARE-HHH-APD Workshop LHC-LUMI-06**  
**‘Towards a Roadmap for the Upgrade**  
**of the LHC and GSI Accelerator Complex’**  
**IFIC, Valencia, Spain, 16–20 October 2006**

The workshop LHC-LUMI-06 will be devoted to beam dynamics aspects of the LHC luminosity upgrade and to high intensity effects limiting the performance of the LHC accelerator complex at CERN and of the FAIR complex at GSI.

Our first goal is to establish a ‘forward looking’ baseline scenario for the LHC Luminosity Upgrade. To this end we have to agree on suitable criteria for the performance rating (e.g., luminosity reach depending on energy deposition margins and shielding optimization of the [IR](#) magnets, technical risks of the most critical hardware, or estimated time for the development, implementation, and operation). Together with LHC experimental physicists, we also need to select the optimal LHC bunch spacing and total beam intensity, in view of the electron cloud heat deposition and cryogenic constraints, RF and feedback aspects, collimation, and beam-beam effects, assessing the corresponding luminosity reach and the tolerable event pile-up.

Our second goal is the scientific rating of alternative scenarios for the upgrade of the CERN accelerator complex and a review of the performance of the FAIR synchrotrons. This should include lattice, RF, and other design parameters, such as coupling impedances, beam collimation and losses, for the PS2/PS+, SPS+, and SIS100/300. The outcome will be a structured list of intensity limits, possible methods to overcome them such as suitable feedback systems, and a list of parameters for the design of pulsed SC magnets leading to a common R&D programme at CERN and GSI.

The first half of the workshop will be mainly devoted to the LHC Luminosity Upgrade and machine-detector interface, while the second half will be devoted to the upgrade of the CERN and GSI accelerator complex. It is our pleasure to invite you to participate to the success of the workshop. Please contact us to obtain more information, confirm your participation, and discuss about your possible contributions.

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