

# Performance Limitations in HL-LHC after LIU Upgrade

Thursday, 28 January 2016 08:30 (25 minutes)

<B>20' + 5'</B>

<UL> <LI>HL-LHC upgrades during LS2 (collimators, TDIS, cryogenics, coating of IP2 and IP8 triplet beam screens) <LI>Beta\* reach and performance (optics, ATS, flat vs. round) <LI>Validation of the levelling scenarios driven by pile-up measurements (beta\* levelling in IP1/5 and separation in IP2/8) with high brightness beams <LI>Expected limitations (aperture, heat loads in the IR1/5 triplets from electron cloud, debris, impedance, ) <LI>Validation of heat load dependence due to electron cloud on bunch population <LI>Validation of the longitudinal stability limits (coupled bunch) confirming the longitudinal stability up to HL-LHC parameters with a single RF system <LI>Validation of the operation of the 400 MHz system in full detuning mode <LI>Performance with head-on and long range limits comparable to HL-LHC <LI>Stability limits and effect of the impedance reduction campaign <LI>Emittance control for very high brightness beams (BCMS) <LI>Halo measurement and control <LI>Losses and margin with respect to quench limits (need or not of IR7 dispersion suppressor collimators) <LI>Component heating and validation of the upgrade scenarios (e.g. confirm that the present MKI design is compatible with the HL-LHC beams for bunch lengths in the range of 8 to 10 cm) </UL>

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**Session Classification:** Session 7: HL-LHC

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