



LHC Status and Future Upgrade Plans

Saturday, July 7, 2012 11:00 AM (30 minutes)

The Large-Hadron-Collider (LHC) operated at CERN has been re-commissioned after a short scheduled technical maintenance stop and reached its previous peak performance safely and after only about a month in the beginning of 2012.

The operational experience gained during the previous year and additional analysis of the robustness of the magnet interconnections as well as the measured available triplet aperture allowed further performance improvements, pushing the hadron-hadron centre-of-mass energy to 8 TeV, reduced final focus beta-functions of 0.6 m in the two high-luminosity insertions. In combination with the significantly reduced and consistently produced transverse beam emittances delivered by the LHC injector chain, these allowed new peak luminosity records beyond $0.5e34 \text{ cm}^2 \text{ s}^{-1}$ necessary to achieve the challenging integrated luminosity targets for 2012.

This contribution summarises the status of the ongoing accelerator and beam optimisations, the planned first long shut-down (LS1) in 2013-2014 to improve the magnet interconnection and protection system in view of safely reaching the LHC design collision energy, as well as the already approved upgrade targeting the modification of the existing high-luminosity insertions. In addition, depending on the outcome of the multitude of ongoing HEP studies – notably the Higgs search, future upgrade options are being discussed that may require more substantial modifications to the existing accelerator or go beyond the present LHC design.

Summary

Summary on behalf of the LHC Team.

Primary author: Dr STEINHAGEN, Ralph (CERN (CH))

Presenter: Dr STEINHAGEN, Ralph (CERN (CH))

Session Classification: Room 218 - Future Accelerators - Detectors and Computing for HEP - TR14&13

Track Classification: Track 14. Future Accelerators