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The LHeC: Basic Concepts and Layout of the Machine

Friday 19 July 2024 20:40 (20 minutes)

The Large Hadron electron Collider (LHeC) project is studying a new LHC interaction region for deep inelastic scattering collisions between electrons and hadrons in the TeV energy scale. An intense 50 GeV lepton beam is brought into collision with one 7 TeV hadron beam from CERN's Large Hadron Collider in parallel to the hadron-hadron operation.
This paper presents the status of the study including the energy recovery linac, the optimisation of the accelerator performance for e & p beam and the challenging task to maintain sufficient beam quality. The LHC lattice has been re-optimised to include an interleaved scheme for electron and proton focusing.
A flexible beam optics has been found for matched e & p beam conditions. It is fully compatible with the HL-LHC upgrade project and the ATS scheme for highest luminosity in the interaction points of ATLAS and CMS,allows concurrent e-p collisions and alternating e-p/hadron-hadron collisions in parallel to the HL-LHC standard p-p operation.

Alternate track

I read the instructions above

Yes

Primary authors: HOLZER, Bernhard (CERN); ANDRE, Kevin (CERN); Dr FORTHOMME, Laurent (CERN); Mrs VONWITZLEBEN, Tiziana (CERN)

Presenter: ANDRE, Kevin (CERN)

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