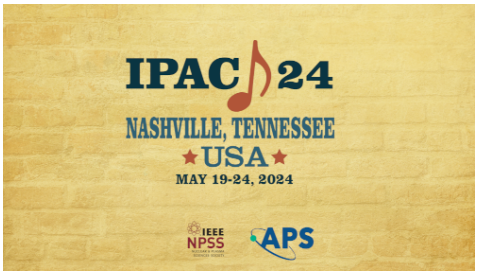

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Development of an ERL for coherent electron cooling at the Electron-Ion Collider

Thursday, 23 May 2024 16:00 (2 hours)

The Electron-Ion Collider (EIC) is currently under development to be built at Brookhaven National Lab and requires cooling during collisions in order to preserve the quality of the hadron beam despite degradation due to intra-beam scattering and beam-beam effect. An Energy Recovery Linac (ERL) is being designed to deliver the necessary electron beam for Coherent electron Cooling (CeC) of the hadron beam, with an electron bunch charge of 1 nC and an average current of 100 mA; two modes of operation are being developed for 150 and 55 MeV electrons, corresponding to 275 and 100 GeV protons. The injector of this Strong Hadron Cooler ERL (SHC-ERL) is shared with the Precooler ERL, which cools lower energy proton beams via bunched beam cooling, as used in the Low Energy RHIC electron Cooling (LEReC). This paper reviews the current state of the design.

Footnotes

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