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Simulation of the simple feedback system for the mitigation of the cavity RF noise effects in EIC HSR

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

Crab crossing in the Electron-Ion Collider (EIC) is planned to provide head-on beam collisions and maximize luminosity for beams with a 25 mrad crossing angle. This crab crossing requires superconducting RF crab cavities for both EIC electron and hadron beams. Phase and amplitude errors of these transverse crab cavities can cause emittance growth, of particular concern for hadron beams and the project hadron cooling requirements. Low-noise low-level RF control and feedback systems are being considered to address the hadron beam noise-driven emittance growth. Here we discuss simulations to investigate this emittance growth, and evaluate performance and requirements of potential beam-based feedback.

Footnotes

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Region represented

North America

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