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Electron Ion Collider Strong Hadron Cooling Design Summary

Tuesday 28 October 2025 09:30 (30 minutes)

The Electron-Ion Collider (EIC) requires a high-energy cooler to maintain excellent beam quality and achieve high luminosity throughout long collision stores. To meet this requirement, the EIC project studied a novel approach known as Coherent Electron Cooling (CeC)—referred to as Strong Hadron Cooling (SHC)—which can provide rapid cooling rates at high energies. The SHC relies on an Energy Recovery Linac (ERL) to provide the intense, high-quality, and low-noise electron beam essential for the cooling process. This talk will overview and summarize the design progress of the Strong Hadron Cooler for the EIC. We will discuss key aspects of the project, including cooling physics, main parameters, the ERL design, risk mitigation strategies, and remaining challenges. Successful outcomes R&Ds could pave the way for a future proposal to implement SHC as an upgrade to the EIC, unlocking its full luminosity potential.

Footnotes

Funding Agency

I have read and accept the Privacy Policy Statement

Yes

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