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Type: **Poster Presentation**

Using the LHeC ERL to generate high-energy photons

Tuesday, 9 May 2023 16:30 (2 hours)

The Large Hadron electron Collider (LHeC) is proposed as a future particle physics project colliding 60 GeV electrons from a six-pass recirculating energy-recovery linac (ERL) with 7 TeV protons stored in the LHC. The ERL technology allows for much higher beam current and, therefore, higher luminosity than a traditional Linac. The high-current, high-energy electron beam can also be used to drive a free electron laser (FEL). In this presentation, we examine how the LHeC ERL can serve as a source of high-energy photons for studies in nuclear physics, high energy physics, axion detection, dark energy and protein crystallography. In the first section, we discuss the performance of an LHeC-based FEL, operated in the SASE mode for generating pulses of X- and gamma rays at wavelengths ranging from 5 Å to 3 pm [1]. In the second section, we investigate photon production via inverse Compton scattering (ICS).

[1] Physical Review Accelerators and Beams 24, 10 (2021)

Funding Agency

Footnotes

It can also be in Energy recovery linac track.

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Yes

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