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Mono-energetic electron and gamma-ray beams at CERN.

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A new method of delivering a monochromatic electron beam to the LHC interaction points is proposed. This method could enlarge the scope of the research programme of the present LHC detectors, by including the research programme of the electron-proton and electron-ion collisions. The carrier of the electron beam, over the full acceleration cycle, is the heavy ion beam. The storage of such a hybrid beam, in the LHC storage rings, could lead to a new exiting possibility of forming a mono-energetic, high-intensity, and highly-collimated gamma-ray beam at CERN - with higher efficiency than the present inverse-Compton-scattering gamma-ray sources. It could open up many new possibilities for basic research and applications, including photo-transmutation of nuclear isotopes, gamma-ray transmission radiography, cancer therapy and positron beam production.

Summary

M.W. Krasny: "Electron beam for LHC", NIM A540 page 222-234.

Primary author: KRASNY, Mieczyslaw (Universites de Paris VI et VII)

Presenter: KRASNY, Mieczyslaw (Universites de Paris VI et VII)

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