

ACCELERATOR SEMINAR

“The Beam-Beam Effect and Its Consequences for High Energy e-p Colliders such as the Lhec and FCC-he”

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High energy e-p colliders like the proposed Large Hadron electron Collider (LHeC), and the proposed Future Circular Collider hadron-electron (FCC-he) collide high energy hadron beams with high energy electron beams for nuclear physics research. The beam-beam effect can have severe repercussions for both the electron and hadron beams in these colliders, and are modelled here using the strong-strong code Guinea-Pig. This work focuses on how the luminosities of the linac-ring designs for both the LHeC and FCC-he react to different waist shifts, bunch charges, and IR beta-functions. Simulations are also performed to measure the emittance growth of the stored hadron beams as they are repeatedly collided with an electron beam that is experiencing an offset jitter. The ramifications for the spent electron beam are also examined.

**Wednesday, April 1, 2015
2:30 p.m.
CEBAF Center, Auditorium**

Coffee before seminar beginning at 2:15 p.m.