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Beam study on low dispersion CEBAF arcs

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The Continuous Electron Beam Accelerator Facility (CEBAF) at Jefferson Lab employs recirculating linac SRF technology to generate a high polarization 12 GeV electron beam for nuclear physics users. New opportunities to study multipass energy recovery have also emerged with the proposal of a 5-pass energy recovery demonstration, ER@CEBAF. New beam optics with minimized beta functions have been developed and tested to avoid collective beam instabilities for multi-pass beams and meet the beam requirements of the nuclear physics community. To enable energy recovery for a common arc beam transport of five passes, achromatic and isochronous arc optics conditions were satisfied by re-designing the transverse optics of CEBAF. This paper focuses on beam studies conducted to study the newly-designed, low-dispersion, lowest energy arcs for CEBAF operations and ER@CEBAF.

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Footnotes

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Yes

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