Contribution ID: **465** Contribution code: **TUP028** Type: **Poster Presentation**

Design of flat-to-vortex beam adapter with strong space charge

Tuesday 12 August 2025 16:00 (2 hours)

We describe the design of a symmetrical skew-quadrupole triplet and associated four-quadrupole matching section for a flat-to-vortex beam transformation in a low-energy, high current electron experiment at the University of Maryland. We review the basic principles involved, from the Courant-Snyder parameters, beam (sigma) matrix, conservation of canonical angular momentum and emittances, to the evolution of the beam envelopes, with emphasis on practical aspects of the design. The initial optimization involves the use of a standard sigma matrix code that includes direct space charge effects. Refinement of the calculations are made possible by a set of moment equations that can use rotated quadrupoles and an expanded set of parameters for optimization. Additional particle-in-cell (PIC) computer simulations and preliminary results from experiments are presented in an accompanying paper.

Please consider my poster for contributed oral presentation

No

Would you like to submit this poster in student poster session on Sunday (August 10th)

No

Footnotes

Funding Agency

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I have read and accept the Privacy Policy Statement

Yes

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