Abstract Submitted
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Two methods of injection/matching at the University of Maryland Electron Ring (UMER)[1] J. TOBIN*, S. BERNAL, R. KISHEK, M. WALTER, B. QUINN, G. BAI*, D. STRATAKIS*, C. PAPADOPOULOS*, M. HOLLOWAY*, T. GODLOVE, M. REISER*, P.G. O'SHEA*[2], Institute for Research in Electronics and Applied Physics,Univ. of Maryland,College Park,MD 20742 — Intense charged particle beams are of great interest to many wide areas of applications ranging from high-energy physics to free-electron lasers. The University of Maryland Electron Ring (UMER) is a scaled model to investigate the physics of such intense beams. It uses a 10-keV electron beam along with other scaled beam parameters that model the larger machines but at a lower cost. In order to have full current transport of the electron beam, and to increase the number of turns of the beam around the ring, injection of the beam from the straight section into the ring becomes crucial. Careful injection of a matched beam will also minimize emittance growth and halo formation around the ring. In this work, we describe and analyze two methods of injection of the electron beam from the straight section into the ring. In one of the methods, the two injection quads are fixed to a preset value, while in the other both the injection quads are switched off. The injection and matching of a space charge dominated beam by these two methods is analyzed and the same is repeated with an emittance dominated beam.

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