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Modeling and Experiments on Injection into University of Maryland Electron Ring (UMER)*[1] GANG BAI, RAMI KISHEK, BRIAN BEAUDOIN, SANTIAGO BERNAL, DONALD FELDMAN, TERRY GODLOVE, IRVING HABER, BRYAN QUINN, MARTIN REISER, DAVE SUTTER, MARK WALTER, PATRICK O'SHEA[2], IREAP, University of Maryland, College Park, UNIVERSITY OF MARYLAND ELECTRON RING (UMER), IREAP, UNIVERSITY OF MARYLAND, COLLEGE PARK TEAM — The University of Maryland Electron Ring (UMER) is built as a low-cost testbed for intense beam physics for benefit of larger ion accelerators. The beam intensity is designed to be variable, spanning the entire range from low current operation to highly space-charge-dominated transport. The ring has been closed and multi-turn commissioning has begun. One of the biggest challenges of multi-turn operation of UMER is correctly operating the Y-shaped injection/recirculation section. It is a challenge because the system requires several quadrupoles and dipoles in a very stringent space, resulting in mechanical, electrical, and beam control complexities. Also, the earth's magnetic field and the image charge effects have to be investigated because they are strong enough to impact the beam centroid motion. This paper presents both simulation and experimental study of the beam centroid motion in the injection region to address above issues.

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