

1G14 Studies of Single Particle Behavior in Relativistic Electron Beam Passage Through a Cusped Magnetic Field. * M. J. RHEE, W. W. DESTLER, D. W. HUDGINGS, M. P. REISER, H. S. UHM, and G. T. ZORN, Univ. of Maryland. --Single particle motion of relativistic electrons in the passage of a hollow beam through the cusped magnetic field of the University of Maryland Electron Ring Accelerator has been studied both analytically and experimentally. Experimental observations were made by passing a small portion of the beam through a pinhole in a metal plate thereby eliminating the self-field effects. The off-centering of orbits due to the finite width of the cusp transition was found to be in good agreement with the theoretical results. These results have been compared to experimental observations of total beam behavior (which includes the self-field effects) in this region. The energy dependence of transmission through the cusp was studied experimentally and was found to conform with theoretical expectations.

*Work supported by the National Science Foundation under Grant GP-29706.