PARTICLE DYNAMICS RESONANCES IN MAGNETOTAIL-LIKE MAGNETIC FIELDS, C. R. Brennan, R. F. Martin, Illinois State University, Department of Physics, Normal, IL 61790-4560, rfm@phy.ilstu.edu

The behavior of particles in the Earth's magnetic tail is not entirely understood. Through our research, we attempt to further characterize charged particle motion in a neutral line magnetic field in the Earth's magnetotail. Previous work on a related magnetic field, the current sheet model (a magnetic field reversal), shows a resonance in which the time the particle spends in the current sheet region is maximized at multiples of the fourth root of the energy. This resonance can also be seen in surface of section plots, where they appear as a phase space symmetry. Our results to date indicate that the neutral line magnetic field contains no such resonances in trapping time, which agrees with a lack of symmetry in our neutral line surface of section plots.