Chaotic Transport in non-monotonic Zonal Flows with Finite Larmor Radius Effects[1] JULIO MARTINELL, ICN - UNAM, DIEGO DEL-CASTILLO-NEGRETE, ORNL — The properties of chaotic transport is studied for a test particle in a non-monotonic zonal flow including Finite Larmor radius (FLR) effects. Using Hamiltonian dynamical systems and a two-mode drift wave model, the EXB Hamiltonian is averaged over the gyro-radius and analyzed with Poincare plots. It is found that chaotic transport produced by the large amplitude modes is suppressed at the position of the shearless curve, as the FLR increases, re-forming a transport barrier. The threshold for the destruction of the barrier is obtained, being of a fractal nature as function of the FLR and wave amplitude. The fraction of particles affected by the barrier in a thermal distribution is determined. For the transport along the flow the process is super-diffusive and thus it is non-local, but it is weakly dependent on the FLR.

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