Charged-Particle Dynamics in an Adiabatic Thermal Beam Equilibrium[1] HAOFEI WEI, CHIPING CHEN, Massachusetts Institute of Technology — The dynamics of charged particles in a recently-discovered adiabatic thermal beam equilibrium [J. Zhou, K.R. Samokhvalova and C. Chen, Phys. Plasmas **15,** 023102 (2008)] are studied. In particular, test particle motion is analyzed numerically, assuming the beam equilibrium fields in a periodic solenoidal focusing channel. Poincare surface-of-section maps are generated to examine the behavior of the test particles in phase space such as nonlinear resonances and chaotic regions. Comparisons are made between the adiabatic thermal and rigid-rotor Vlasov beam equilibria [C. Chen, R. Pakter and R. C. Davidson, Phys. Rev. Lett. **79**, 225 (1997)].

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