1C41

Generation and Analysis of Multiple Phase Space Structures

D. Yu. Eremin and H. L. Berk

Institute for Fusion Studies, University of Texas at Austin
Austin, Texas, 78712

Numerical simulations are performed where a single linear mode is destabilized by a weakly inverted population of kinetic particles to produce a primary and secondary hole-clump phase space structures. As a result the secondary phase space structures reduces the amplitude of the primary phase space nonlinear mode. To understand this effect, a reduced equation governing the evolution of a mode amplitude in the presence of another mode is derived. When the separation of the two modes in phase space is accounted for when there is only a modest amount of stochasticity in the particle orbits, the amplitude is calculated to be smaller than in case of one mode alone. Results are in agreement with the numerical simulations. Stochastic effects reduces the amplitude even further when the phase velocities of adjacent modes are closer to each other.

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