

Abstract Submitted
for the DPP13 Meeting of
The American Physical Society

Calculations of superbanana orbits and transport in tokamaks¹

M.G. SCHLUTT, K.C. SHAINING, University of Wisconsin - Madison, D.A. SPONG, Oak Ridge National Laboratory — Particle drift orbits are followed in an ITER-like magnetic field using the full-f code, DELTA5D. In the simulations presented here, the magnetic field has many small 3-D components which break the toroidal symmetry in $|\mathbf{B}|$. In this magnetic field, many particles are launched with specific energy and pitch angle combinations and their trajectories are observed. By scanning pitch angle, a class of particles has been found which have superbanana trajectories in the absence of a radial electric field. These particles have pitch angles near the trapped/circulating boundary (“drift reversal”). Transport studies for these particles have been carried out, with diffusion coefficients calculated for the superbanana plateau regime. Initial scaling results for the transport in this regime are presented.

¹Work supported by U.S. Department of Energy, grant number DE-FG02-01ER54619

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Date submitted: 12 Jul 2013

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