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Particle simulation in stochastic magnetic fields at tokamak edge

C.C. CHANG, Y. NISHIMURA, C.Z. CHENG, Institute of Space and Plasma Sciences, National Cheng Kung University — An orbit following simulation code is developed incorporating magnetic perturbation. While magnetic field lines can exhibit stochastic behavior in the presence of incommensurate magnetic perturbations,¹ the particle motions are also influenced by the mirror force and the perturbed electric fields. Remnants of lowest order magnetic islands can also play an important role in regulating the particle and heat transport. Effective perpendicular transport can be enhanced in the presence of trapped particles; how the mirror force influences the transport in stochastic magnetic fields is examined. This work is supported by National Science Council of Taiwan, NSC 100-2112-M-006-021-MY3 and NCKU Top University Project.

¹In the simulation model, the magnetic perturbations are externally imposed; T. E. Evans, R. A. Moyer, et al., *Nature Physics* **2**, 419 (2006).

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