

Abstract Submitted
for the DPP16 Meeting of
The American Physical Society

Fokker-Planck equation in the presence of a uniform magnetic field¹ DING LI, CHAO DONG, WENLU ZHANG, Institute of Physics, Chinese Academy of Science, Beijing 100190, China — The Fokker-Planck equation in the presence of a uniform magnetic field is derived through the transform method. It has the same form as the case of no magnetic field but the Fokker-Planck coefficients are calculated based on a different motion equation and have different physical interpretations. Within the binary collision model, the Fokker-Planck coefficients are calculated explicitly which are free from infinite sums of Bessel functions. They can be used to investigate the effects of magnetic field on velocity slowing down, diffusion, and temperature relaxation conveniently. The kinetic equation is also manipulated into the Landau form and shown to be identical to the result obtained from the BBGKY approach when the collective effects are neglected and satisfy the conservation of particles, momentum, and energy.

¹Supported by National Special Research Program of China For ITER and National Natural Science Foundation of China.

Ding Li
Institute of Physics, Chinese Academy of Science

Date submitted: 14 Jul 2016

Electronic form version 1.4