

Different Fokker-Planck approaches to simulate electron transport in plasmas.

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On the basis of our Fokker-Planck code “FPI”, a new kernel for nonlocal electron transport in plasmas has been developed. Large scale simulations of plasma macroscopic characteristics have been made by using both this Fokker-Planck and a new Hydrodynamic code using the new kernel [1]. However, these simulations were made with the approximation of spherical Rosenbluth potentials. We have now added the option of “linearized” non-spherical Rosenbluth potentials [2], and we will report on the influence of this on heat transport. The influence of the number of Legendre polynomials used in the simulations has been investigated. A comparison between our Legendre expansion code (FPI) and our new (ν, μ) Fokker-Planck code with fully anisotropic Rosenbluth potentials is made for the problem of the relaxation of a bi-Maxwellian ($T_{\perp} \neq T_{\parallel}$) electron distribution function.

[1] F.Alouani Bibi and J-P. Matte, P.R.E. **66**, 066414 (2002).

[2] I.P.Shkarofsky, M.M. Shoucri and V.Fuchs, Computer Phys. Comm. **71**, 269 (1992).