

Use of the Drift Kinetic Equation to Describe Electrostatic Turbulent Transport

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Abstract. It is shown that an appropriate expansion of the drift kinetic equation with an accompanying set of approximations allows the derivation of an expression for the particle flux which is in agreement with the experimental result that the density profile has the shape of $(qH)^{-0.8}$, where q the usual Tokamak safety factor and H is a slowly varying geometric factor. This procedure reproduces a result which was previously obtained by expressing the Vlasov equation in Lagrangian coordinates, which are the actions of the motion. These actions are the magnetic moment, the parallel momentum invariant and the poloidal flux.

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