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Solution of Linearized Drift Kinetic Equations in Neoclassical Transport Theory by the Method of Matched Asymptotic Expansions[1] S.K. WONG, V.S. CHAN, F.L. HINTON, General Atomics — The classic solution of the linearized drift kinetic equations in neoclassical transport theory for large-aspect-ratio tokamak flux-surfaces relies on the variational principle and the choice of "localized" distribution functions as trialfunctions.[2] Somewhat unclear in this approach are the nature and the origin of the "localization" and whether the results obtained represent the exact leading terms in an asymptotic expansion int he inverse aspect ratio. Using the method of matched asymptotic expansions, we were able to derive the leading approximations to the distribution functions and demonstrated the asymptotic exactness of the existing results. The method is also applied to the calculation of angular momentum transport[3] and the current driven by electron cyclotron waves.

[1]Work supported by the US DOE under Grant DE-FG03-99ER54309.
[2]M.N. Rosenbluth, et al., Phys. Fluids **15** (1972) 116.
[3]M.N. Rosenbluth, et al., Plasma Phys. and Contr. Nucl. Fusion Research, 1970, Vol. 1 (IAEA, Vienna, 1971) p. 495.

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☐ Prefer Oral Session
☒ Prefer Poster Session

Special instructions: Poster 17, Transport, Boundary Plasma

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