

Abstract Submitted
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Non-local plasma heat flow in a perturbed magnetic field¹ JOHN JAMES, ERIC HELD, Utah State University — In this work, we review the derivation and implementation of a non-local closure² for the field-aligned heat flow in the plasma fluid temperature equation. We apply the closure to a plasma embedded in a sheared slab magnetic field configuration with a single-helicity perturbation and compare derived quantities such as effective radial thermal diffusivity and on-axis plasma temperature with those obtained using a flux-limiting and a local diffusive form for the closure. A novel algorithm for rapid approximation of the heat-flow integrals involved in calculating the non-local closure is presented along with results from validity and convergence tests.

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²E. D. Held, J. D. Callen and C. C. Hegna, Phys. Plasmas 10, 3933 (2003).

John James
Utah State University

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