

A New General Method for Solving the Resistive Inner Layer Problem

S.A. Galkin*, A.D. Turnbull, J.M. Greene, D.P. Brennan

General Atomics, P.O. Box 85608, San Diego, California 92186-5608

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Abstract

Classical resistive tearing mode stability in toroidal plasma configurations can be determined by matching the solutions between the ideal and resistive layers. A technique developed for the outer ideal region [S.A.Galkin et al, Phys. Plasmas **7** 4070, (2000)] is generalized and successfully applied to the inner resistive layer problem with irregular singularities. The new method is shown to agree with previous published results and can be used over an extended parameter range. A generalization of the traditional resistive layer equations for non uniform inertia is also modeled using a variable density distribution and solved using the new technique. The influence of the total mass and density profiles on the matching conditions is studied and discussed.

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*Present address: MAE/Fusion, University of California, San Diego, CA; Phone (858) 822-4138, e-mail: sgalkin@ferp.ucsd.edu.