Abstract Submitted
for the DPP12 Meeting of
The American Physical Society

Momentum transport due to overlapping tearing modes in tokamaks and reversed field pinches A.J. COLE, Columbia University, J.M. FINN, Los Alamos National Laboratory, C.C. HEGNA, P.W. TERRY, University of Wisconsin — Quasilinear calculations related to momentum transport due to a spectrum of stable tearing modes in RFPs and tokamaks will be presented. In RFPs, the modes considered are stable high poroidal mode number modes with mode rational surfaces near the reversal layer, and driven by mode coupling originating by the linearly unstable modes with n $\sim$ 2 R/a. In tokamaks these are high poloidal mode number stable tearing modes near the edge that are driven by external field errors. In both cases the odes are weakly driven with closely packed rational surfaces, so that the tearing layers, but not the islands, overlap. We first present the total Maxwell and Reynolds forces found by integrating the Maxwell and Reynolds stresses across the layer of a single tearing mode. We also present a calculation of the total Maxwell and Reynolds torques about the layer center. The Reynolds torque is related to the effect which drives or damps zonal flows. The Maxwell and Reynolds torques are present because of terms which break the usual tearing mode symmetry, namely velocity shear across the layer and current density gradient in the layer. These results are shown in both the resistive-inertial and visco-resistive regimes.

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Date submitted: 03 Jul 2012 Electronic form version 1.4