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[**X**] Theory [ ] Experiment

Perpendicular Resistivity and Effects of Toroidal Magnetic Field Changes,* C. Collins, *MSU Bozeman,* P.A. Politzer, *GA* – The occurrence of current-driven plasma instabilities in tokamaks is highly influenced by the toroidal current profile. Recent DIII-D experiments used a time-varying toroidal magnetic field to broaden the current profile. When changing magnetic field is applied, poloidal electric field is induced. The parallel component of the induced electric field drives the desired current along the confining magnetic field, but the effect of the perpendicular component is not well understood. The presented analysis examines possible effects of poloidal electric field on both poloidal currents and radial plasma flow. A simplified model of tokamak plasma having a circular cross section and large aspect ratio uses single-fluid equations, keeping all terms in Ohm's law. The model results will be compared with data from toroidal magnetic field ramp experiments. The relaxation of possible perpendicular current should depend on the plasma resistivity. If model predictions differ significantly from experiment, other mechanisms influencing perpendicular resistivity in the plasma may be identified.

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