Abstract Submitted
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Modeling of Momentum Transport in DIII-D Discharges Due to Magnetic Drags Induced by MHD Activities[1] Q. REN, ASIPP, M. CHU, L.L. LAO, H.E. ST. JOHN, R.J. LA HAYE, GA, J.M. PARK, ORNL, J.M. JEON, ORISE, C. ZHANG, D. ZHOU, G. LI, ASIPP — Toroidal rotation and rotational shear provide many beneficial effects to stabilize MHD instabilities and suppress turbulence that are crucial for attainment of high beta and high confinement envisioned for tokamak and ITER high performance regimes. MHD activities such as RWMs can interact with the plasma and slow down the rotation by breaking the toroidal symmetry to induce a toroidal viscosity. Preliminary results using ONETWO transport code with a simple inductive motor model indicate that the resonant magnetic drag effect alone cannot fully describe the evolution of the rotation profile in DIII-D RWM discharges. In these simulations, only the effects due to the perturbed radial magnetic fields estimated from experimental measurements at the q=2 surface were considered. Non-resonant magnetic damping effects due to ripple and neoclassical viscosity are being implemented in ONETWO and likely play a role. The results will be presented.

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