Abstract Submitted
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Momentum Transport Studies in NSTX[1] STANLEY KAYE, WAYNE SOLOMON, Princeton Plasma Physics Laboratory, NSTX TEAM — The momentum diffusivity in NSTX is low, $< \chi_i$, and it does not scale with the ion thermal diffusivity, as at conventional aspect ratio, possibly due to suppression of ITG modes due to high ExB shear. Dedicated confinement scans show that, if anything, the χ_ϕ scales with χ_e. Perturbative studies of momentum transport have recently been performed on NSTX using n=3 non-resonant braking as a means of perturbing the rotation profile. Braking was applied for 50 ms during a relatively MHD-quiescent phase of the discharge, after which the evolution of the plasma rotation was measured. The non-local torque perturbation created by the n=3 error field created some distortion to the toroidal rotation profile, allowing the separation of momentum flux caused by diffusion (proportional to the gradient in the toroidal rotation) and a momentum pinch (proportional to the toroidal rotation). Preliminary analysis indicates the necessity of a momentum pinch to explain the profile evolution. The effect of off-diagonal terms in the momentum balance equation (eg grad(Ti), grad(ne)) are also considered.

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