Abstract Submitted
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Reynolds Stress-Driven Edge Momentum Transport in DIII-D[1] JOSE BOEDO, D. RUDAKOV, UCSD, J. DEGRASSIE, General Atomics, B. GRIERSON, A. ASHOURVAN, PPPL — Tokamak plasma rotate toroidally due to an intrinsic edge source [1]. Reynolds Stress has been proposed $\langle nv_\phi v_\rho\rangle$=$\langle n\rangle\langle\tilde{v}_\phi \tilde{v}_\rho\rangle$+$\langle v_\phi\rangle\langle\tilde{n}_\phi\tilde{v}_\rho\rangle$+$\langle\tilde{n}\tilde{v}_\phi\tilde{v}_\rho\rangle$ as the transport mechanism. The term $\langle n\rangle\langle\tilde{v}_\phi\tilde{v}_\rho\rangle$ peaking ∼-1e26m^-1s^2 just inside the separatrix, causes a significant inward pinch due to cross-phase effects while the outward convection term, $\langle v_\phi\rangle\langle\tilde{n}\tilde{v}_\rho\rangle$, peaking at ∼-1E26m^-1s^2 roughly balances it. Surprisingly, the triple correlation term, $\langle\tilde{n}\tilde{v}_\rho\tilde{v}_\phi\rangle$ peaking at t∼-1E25m^-1s^2 becomes important as other terms almost null out. A rough momentum balance finds that the momentum flux from the RS term can explain the observed momentum balance.

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