Abstract Submitted
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Calculation of rotation and poloidal asymmetries in DIII-D[1] R.W. KING, W.M. STACEY, Georgia Tech — The Braginski rate-of-strain tensor model of viscosity, extended to toroidal geometry [1] and arbitrary collisionality [2], predicted central toroidal rotation within an order of magnitude of experiment [3,4] using a circular flux surface model to calculate poloidal asymmetries that determine the magnitude of the Braginski toroidal gyroviscosity. Refinement of the poloidal asymmetry calculation using a Miller model flux surface led to an order of magnitude improvement in agreement with experimental toroidal velocity in the central region of DIII-D [5]. An orthogonalized flux-surface aligned localized coordinate frame [6] has been developed to improve calculations of poloidal asymmetries. We extend this system to calculate poloidal asymmetries and velocities to evaluate how well an accurate calculation of the extended Braginski gyroviscosity can describe the toroidal momentum damping in the central regions of DIII-D. 1) Phys. Fluids 28 (1985) 2800. 2) Nucl. Fusion 25 (1985) 463. 3) Phys. Fluids B 5 (1993) 1828.4 Phys. Plasmas 13 (2006) 062508. 5) Nucl. Fusion 53 (2013) 043011. 6) Phys. Plasma 23 (2016) 052505.

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