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Testing the Validity of the Neoclassical Toroidal Viscosity Model of Torque due to 3D Non-Resonant Magnetic Fields[1] A.J. MCCUBBIN, Hope College, S.P. SMITH, N.M. FERRARO, General Atomics, J.D. CALLEN, U. Wisconsin-Madison, O. MENEGHINI, ORISE — Understanding the torque applied by resonant and non-resonant magnetic perturbations and its effect on rotation is essential to predict confinement and stability in burning plasmas. Non-axisymmetric 3D fields produced in the DIII-D tokamak apply a torque to the plasma, which can be evaluated through its effect on the plasma rotation. One explanation for this torque is Neoclassical Toroidal Viscosity (NTV) acting through non-resonant field components [1]. We have developed a software framework in which magnetic perturbations calculated by the state of the art two fluid MHD code M3D-C1 can be used in NTV calculations. For discharges with applied external magnetic fields in DIII-D, the experimentally determined torques will be analyzed and compared with NTV models.

[1] J.D. Callen, Nucl. Fusion **51**, 094026 (2011).

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