Abstract Submitted
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Collisionality Dependence of Multi-species Density Peaking in Turbulence Simulations of C-Mod Plasmas[1] D.R. MIKKELSEN, M. BITTER, L. DELGADO-APARICIO, K.W. HILL, PPPL, M. GREENWALD, N. HOWARD, Y. PODPALY, M. REINKE, J.E. RICE, J.W. HUGHES, Y. MA, MIT, J. CANDY, R.E. WALTZ, General Atomics — In nonlinear GYRO simulations of C-Mod plasmas, a turbulently driven pinch produces modest density peaking of all species. The ratio of density at r/a=0.44 and 0.74 is 1.2 for the majority and minority D & H (and electrons), and increases with impurity Z: 1.1 for helium, 1.15 for boron, 1.29 for neon, 1.36 for argon, 1.47 for molybdenum. Density peaking is only weakly affected when the ion temperature profile is varied to align the predicted heat flux to the experimental transport analysis. New simulations will extend the collisionality to the lower part of the experimentally accessible range in C-Mod to study the collisionality dependence of density peaking, and to establish whether much stronger peaking is predicted for lower collisionalities. Simulations based on measured I-mode ion and electron temperature profiles will also be presented.

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