Abstract Submitted
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Differences in Predictions using the MMM8.1 and MMM7.1 Multi-Mode Transport Models[1] C. WILSON, U. Rochester, A.H. KRITZ, T. RAFIQ, Lehigh U., A.Y. PANKIN, Tech-X Corp. — The updated Multi-Mode anomalous transport module version 8.1 (MMM8.1) [1] includes several advancements over the previous version (MMM7.1). In particular, the new version of the Multi-Mode transport model includes improved formulations of the flow shear effects and of the toroidal and poloidal momentum diffusivities. The MMM8.1 model can be used to compute toroidal and poloidal angular momentum transport as well as thermal and particle transport in tokamaks. To facilitate the research carried out, a new efficient tool has been developed to examine simulation results obtained using the PTRANSP code. The effective diffusivities are computed for several DIII-D discharges using the MMM8.1 model. These diffusivities are compared with those predicted using the previous model, MMM7.1. In addition, systematic scans over a range of plasma parameters such as plasma collisionality, magnetic shear, and $\mathbf{E}\times\mathbf{B}$ flow shear are carried out. These scans are used to identify those plasma parameters that would result in the most significant differences in predictions using the MMM8.1 transport model in contrast to using the MMM7.1 model.

[1] T. Rafiq, A.H. Kritz, J. Weiland, A.Y. Pankin, and L. Luo, Phys. Plasmas 20, 032506 (2013).

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