

Abstract Submitted
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Implementation and Verification of Multi-Mode Transport Model v7.1 in the SWIM/IPS Framework L. LUO, T. RAFIQ, A.H. KRITZ, G. BATEMAN, Lehigh University — The Multi-Mode anomalous transport model, version 7.1 (MMM v7.1) [1], is implemented as a component of the SWIM Integrated Plasma Simulator (IPS). MMM v7.1 is an anomalous theory-based transport model that includes an improved Weiland model for the ITG, TEM and ideal MHD modes together with a quasilinear model for ETG modes and a new model for the drift resistive inertial ballooning modes. Simulations of ITER scenarios are carried out using IPS with MMM v7.1, and the simulation results are verified with those obtained in comparable PTRANSP simulations. In particular, the temperature profiles predicted in the SWIM simulations are compared with those obtained in the PTRANSP simulations. The IPS provides a flexible, extensible computational framework capable of coupling state-of-the-art models for energy and particle sources, transport, and stability for tokamak core plasma. In the ITER simulations, the parallel versions of the NUBEAM and TORIC components are used for auxiliary heating, while feedback loops in the TSC component are used to control the plasma position and shape.

[1] T Rafiq *et al*, poster at this APS meeting.

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