

Burning plasma projections using drift wave transport models and scalings for the H-mode pedestal

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Abstract

The GLF23 and multi-mode core transport models are used along with models for the H-mode pedestal to predict the fusion performance for the International Thermonuclear Experimental Reactor, Fusion Ignition Research Experiment, and IGNITOR tokamak designs. Simulations using combinations of core and pedestal models have also been compared with experimental data for H-mode profiles in DIII-D, JET, and Alcator C-Mod. Both power independent (ballooning mode limit) and power dependent pedestal scalings are examined. Although the two drift-wave transport models reproduce the core profiles in a wide variety of tokamak discharges, they differ in their projections to burning plasma experiments. Differences in the core transport models in their response to the ion temperature gradient (*i.e.* their stiffness) and impact of the power dependence of the H-mode pedestal on fusion performance predictions are discussed.

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