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Validation of the SOLPS Parallel Heat Transport Model[1] J.M. CANIK, A.R. BRIESEMEISTER, Oak Ridge National Laboratory, C.J. LASNIER, A.G. MCLEAN, M.A. MAKOWSKI, Lawrence Livermore National Laboratory, A.W. LEONARD, General Atomics, J.G. WATKINS, Sandia National Laboratory
— Recent SOLPS 2D fluid plasma/neutrals edge transport simulations have shown a consistent under-prediction of radiated power that when accounted for allows simulations to successfully match high resolution divertor and scrape-off-layer density (n_e) and temperature (T_e) measurements near detached conditions in DIII-D. The parallel heat transport model has been evaluated in simulations with the upstream n_e and T_e and divertor heat flux matched to experiments. Simulations of L-mode discharges near detachment onset require either increased carbon sources or hydrogenic recombination radiation to match measured radiative losses. With this increase, the poloidal T_e profile shows good agreement with 2D divertor Thomson scattering data, including an extended region with very low T_e, which cannot be reproduced without the additional radiative loss. Similar scaling of the radiated power also results in agreement for the T_e profile measured in H-mode experiments; however, in this case the plasma data show a poloidally extended region of high ne that is not captured in simulations.

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John Canik
Oak Ridge National Laboratory

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