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Application of the New Weiland Model for Studying Transport Barriers[1] ARNOLD KRITZ, XIANG FAN[2], TARIQ RAFIQ, VARUN TANGRI, Lehigh University, ALEXEI PANKIN, Tech-X Corp., JAN WEILAND, Chalmers Univ. of Technology, Sweden — Recent advances in the Weiland drift wave model include new correlation length and new kink (peeling) terms as well as collisions on free electrons. The new model also includes electromagnetic effects on toroidal and poloidal momentum transport. These advances make the model suitable for simulating anomalous effects in transport barriers. A description of the Weiland model content is included in the adjacent poster by T. Rafiq *et al.* In this study, particle, thermal, and momentum transport coefficients are computed in systematic scans over electron and ion temperature gradients, temperature ratio, density gradient, magnetic q, collision frequency, trapped particle fraction, magnetic shear, Larmor radius, plasma β and elongation. Special consideration is given to the plasma parameter scans that correspond to the plasma edge region such as large temperature and density gradients, large magnetic shear and large magnetic q. The transport results yielded by the new Weiland drift wave model are contrasted with the earlier version of the model. Combined with high fidelity models for neoclassical effects such as NEO and XGC0 models, it is anticipated that the new Weiland model can be used to model H-mode pedestal buildup and recovery between ELM crashes.

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