

Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Progress in Verification and Validation of the PTRANSP Code G. BATEMAN, A.H. KRITZ, F.D. HALPERN, A.Y. PANKIN, Lehigh University, D. MCCUNE, R.V. BUDNY, S. JARDIN, PPPL — The PTRANSP code is the result of modifying the TRANSP code in order to enable the predictive computation of plasma profiles. The NTCC PEDESTAL Module has been added to the PTRANSP code to compute height of the H-mode pedestal. A preliminary verification and validation of the PTRANSP code is carried out using either the MMM95 or GLF23 transport model. Simulation results are compared with experimental data for a variety of H- mode discharges and also compared with corresponding BALDUR simulation results. The BALDUR code inputs are adjusted so that the profiles for power deposition, impurity concentration, magnetic q-value, and elongation are matched, to extent possible, with the corresponding PTRANSP profiles. In the comparisons, the height of the H-mode pedestal is kept nearly constant in time. The effect of changes in the q-profile caused by varying the magnetic reconnection fraction during sawtooth crashes is explored. Numerical artifacts associated with the way the transport equations are solved are investigated. Solutions obtained using new transport equation solvers are compared with previous solutions obtained by smoothing transport over time or space. The objectives of this verification and validation of PTRANSP simulations using the MMM95 and GLF23 models are to develop standardized protocols for integrated modeling simulations of H-mode discharges in tokamaks.

A.H. Kritz

Date submitted: 21 Jul 2006

Electronic form version 1.4