Performance of ITER H-mode discharges with various mixes of external heating computed using the MMM08 transport model in PTRANSP simulations

A.H. KRITZ, G. BATEMAN, F.D. HALPERN, A.Y. PANKIN, T. RAFIQ, Lehigh U., R.V. BUDNY, D.C. MCCUNE, PPPL — The new MMM08 Multi-Mode transport model [1] is used in PTRANSP simulations to predict the time evolution of temperature and toroidal angular frequency profiles in ITER H-mode discharges. External heating and current drive sources include NBI, ECRH and ICRH, computed using NUBEAM, TORAY and TORIC respectively. Five mixes of heating (with associated current and torque drives, and fueling) are considered in order to examine various possibilities and contingencies for ITER. The evolution of the magnetic $q$ profile is computed using the NCLASS module for neo-classical resistivity and bootstrap current together with the KDSAW module for the effect of sawtooth crashes. The fusion power production and fusion $Q$, computed as a function of heating power mix and pedestal height, are compared with those obtained using the GLF23 model [2].


1Current address, Ecole Polytechnique, Palaiseau, France

Glenn Bateman
Lehigh University

Date submitted: 17 Jul 2009