TRANSP predictive modeling of EAST steady state plasmas

R.V. BUDNY, W.M. SOLOMON, B. GRIERSON, X. YUAN, C. KESSEL, PPPL, S. DING, IPP-Hefei, CN — The EAST tokamak is starting operation with major upgrades to the heating, current drive, and diagnostic systems [1]. We use the plasma transport code TRANSP to predict performance [2] with nearly steady state non-inductive current conditions at plasma current near 500 kA and toroidal field near 2.3 T. The heating power is assumed to start with \(\simeq 4\) MW of beam injection and continue with \(\simeq 3\) MW of ICRH. Current drive of \(\simeq 2\) MW of LHCD is assumed. The GLF23 [3] predictive model incorporated in TRANSP is used to predict temperatures, and TGLF [4] to predict temperatures, toroidal rotation, and electron density profiles. We explore scans in parameters such as \(I_p\), \(B_0\), and boundary assumptions to maintain non-inductive and high performance.


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