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A Comparative Study of Tokamak Discharges with Internal Transport Barriers Using Predictive Transport Simulations[1] J.E. KINSEY, Lehigh University, R.E. WALTZ, G.M. STAEBLER, General Atomics — Drift-wave based transport models have been shown to reasonably reproduce the density and/or temperatures profiles in a large database of L– and H–mode tokamak discharges. Recently, the GLF23 transport model successfully reproduced the step-wise formation of an internal transort barrier (ITB) in a DIII–D discharge where spontaneous jumps were observed in the core electron and ion temperature and toroidal rotation velocity as the ITB expanded outward.[2] The step-wise transitions are due to competition between toroidal rotation and diamagnetic contributions to the $E \times B$ velocity shear. We extend upon this work and compare predictive simulations of discharges with ITBs from the DIII–D, JET, and TFTR tokamaks. Using the GLF23 model, the temperature and toroidal velocity profiles are evolved while dynamically computing the effects of $E \times B$ shear and Shafranov shift stabilization.

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[2]J.E. Kinsey *et al.*, "Dynamic Modeling of Step-wise Internal Transport Barrier Formation in DIII–D NCS Discharges," submitted to Phys. Rev. Lett.

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[X] Prefer Oral Session
[ ] Prefer Poster Session

Special instructions: Oral presentation, immediately following EJ Doyle

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