Abstract Submitted
for the DPP99 Meeting of
The American Physical Society

Sorting Category: 5.9 (Computation/Simulation)

**Dynamic Modeling of Multi-channel Transport Bifurcations Resulting in Internal Transport Barriers in Tokamaks**[1]
J.E. KINSEY, Lehigh University, R.E. WALTZ, G.M. STAEBLER, H.E. ST. JOHN, General Atomics — Internal transport barriers (ITBs) provide a means of minimizing turbulent transport giving access to fusion power plants at a reduced size. Rotational shear stabilization is believed to play a central role in the formation of ITBs. However, predicting bifurcations in particle, energy, and momentum confinement using comprehensive theoretical models remains an important issue. The GLF23 transport model has the distinguishing feature that it contains both heat flux and momentum bifurcation mechanisms. Recently, dynamic formation of an ITB resulting from an $E \times B$ shear driven bifurcation was successfully demonstrated using the GLF23 model for a DIII–D NCS discharge with an L–mode edge.[2] Here, the bifurcation dynamics and ITB formation in DIII–D NCS and JET OS discharges are compared and the synergistic coupling between the turbulent viscosity and thermal transport is assessed. The role of $T_\mathrm{i}/T_\mathrm{e}$ effects and the electron temperature gradient (ETG) mode on barrier formation is investigated.

[1]Supported by U.S. DOE Grants DE-FG03-95ER54309 and DE-FG03-92ER54141.
[2]J.E. Kinsey *et al.*, 26th EPS Meeting, Maastricht, Netherlands (1999).

Jon E. Kinsey
kinsey@gav.gat.com
Lehigh University

☐ Prefer Oral Session
☒ Prefer Poster Session

Special instructions: immediately following J Candy

Date printed: July 19, 1999 Electronic form version 1.4