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Stability of Finite-n Global Magnetohydrodynamic Modes Using the GATO Stability Code[1] M.S. CHU, S.K. WONG, L.L. LAO, A.D. TURNBULL, General Atomics, M.S. CHANCE, Princeton Plasma Physics Laboratory — This work extends the capability of the GATO stability code[2] to analyze realistic numerical tokamak equilibria for their stability to higher n ($\sim$ 5–10) MHD modes. This is motivated by the experimental evidence of these modes being relevant for both plasma termination and the behavior of ELMs. The ballooning angle transformation[3] is applied to the displacement variables in the GATO representation. The potential energy matrix is constructed with the inclusion of extra mapping quantities. The vacuum energy computed from the Greens function is also modified to couple to the transformed displacement at the plasma boundary. The resultant eigenvalue problem is solved with the modified boundary condition in the poloidal direction suitable for these transformed variables. The dependence of the plasma stability as a function of toroidal mode number and plasma equilibrium properties will be presented.

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[2]L.C.Bernard *et al.*, Comput. Phys. Commun. **24**, 377 (1981).
[3]R. Gruber *et al.*, Comput. Phys. Commun. **24**, 363 (1981).

M.S. Chu
chum@fusion.gat.com
General Atomics

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