

Abstract Submitted
for the DPP13 Meeting of
The American Physical Society

Ballooning Stability of Separatrix Spanning Modes¹ J.R. MYRA, D.A. BAVER, D.A. D'IPPOLITO, Lodestar Research Corp., M.V. UMANSKY, L.L. LODESTRO, LLNL, R.J. GOLDSTON, J.H. NICHOLS, PPPL — The ideal ballooning stability of the near-separatrix tokamak plasma and its possible relation to the Greenwald density limit, as discussed in [1], motivates the present work. We consider a sequence of CORSICA-generated equilibrium shapes with varying elongation and examine the marginal stability of infinite-n and finite-n separatrix-spanning modes using the 2DX [2] and ArbiTER [3] eigenvalue codes. The elongation scaling of the result provides a test of the proposed density-limit theory. A new computationally efficient technique for dealing with the phase variation of moderate-n modes across the branch cut in field-line following coordinates will also be discussed.

[1] R. J. Goldston and T. Eich, 24th IAEA Fusion Energy Conference, San Diego, USA, October 8 - 13, 2012, paper IAEA-CN-197/TH/P4-19

[2] D. A. Baver, J. R. Myra and M.V. Umansky, *Comp. Phys. Comm.* **182**, 1610 (2011).

[3] D. A. Baver et al., this conference

¹Work supported by US DOE grants DE-FG02-97ER54392 and DE-SC0006562.

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Date submitted: 11 Jul 2013

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