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MHD Stability Study of Oblate FRCs G.A. CONE, R.D. MILROY, C.C. KIM, PSI-Center, University of Washington — The $n = 1$ tilt, interchange, and shift modes of oblate FRC plasmas are simulated using the `NIMROD` code. The grid geometry approximates the shaped, close-fitting flux conserver used in the Swarthmore Spheromak eXperiment (SSX) oblate FRC study[1]. The results validate the work by Belova et al[2] which characterized important thresholds for these instabilities. The tilt mode changes from an internal mode to an external mode with decreasing FRC elongation, and in the oblate case it can be stabilized with a close-fitting conducting wall. By increasing the edge separatrix pressure for wall-supported FRCs, the growth rate of interchange mode decreases, and complete stabilization is achieved when the separatrix beta exceeds 30%. Simulations of the dynamics of FRC formation from two counter-helicity spheromaks are beginning, and preliminary results will be presented.

[1]M. J. Schaffer, M. Brown, C. Cothran, N. Murphy, An oblate FRC concept for SSX, ICC Workshop, College Park, MD, Feb 2007
[2]E. V. Belova, S. C. Jardin, H. Ji, M. Yamada, R. Kulsrud, Numerical study of global stability of oblate field-reversed configurations, Phys. Plasmas, **8**(4), 1267 (2001)

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