Abstract Submitted
for the DPP08 Meeting of
The American Physical Society

Linear stability of resistive interchange modes in a cylindrical Reversed-field pinch plasma[1] MIO SUZUKI, FATIMA EBRAHIMI, DALTON SCHNACK, University of Wisconsin-Madison — Experimental techniques of current profile control and pellet injection have yielded RFP discharges that are free of current driven instabilities and achieve beta of 26% [1]. Resistive interchange modes are expected to be the dominant instability in these plasmas. Using the NIMROD code, we calculate the linear stability of these modes in a tearing mode stable cylindrical RFP equilibrium for a range of beta. A growth rate spectrum showing the fastest growing modes is obtained. According to linear theory [2], the growth rate of interchange mode is increases with azimuthal mode number, m. The result also suggests that all the modes tend to localize around a particular range of rational surfaces with increasing localization for larger m. We also present a linear simulation including gyroviscosity to investigate the stabilizing finite Larmor Radius (FLR) effect on interchange modes. In accordance with earlier theoretical work [3] , the suppression of growth rate is observed where $k\rho_i \sim 1$. [1] M. D. Wyman et al., Phys. Plasmas 15, 010701 (2008) [2] B. Coppi, J. M. Greene, and J. L. Johnson, Nucl. Fusion 6, 101 (1966) [3] T. E. Stringer, Nucl. Fusion 15, 125 (1975)

[1]Work supported by U.S. DOE under Grant DE-FG02-06ER54868 and UW-Madison Graduate School Research Award, 135-GP92

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Date submitted: 18 Jul 2008 Electronic form version 1.4