Abstract Submitted
for the APR09 Meeting of
The American Physical Society

On-axis ideal internal kink modes in RFPs[1] V.V. MIRNOV, G. FIKSEL, University of Wisconsin - Madison — Large scale, current-driven, resistive MHD tearing modes are believed to determine the dynamics of the Reversed Field Pinch (RFP) operation. Ideal MHD modes are supposed to be stabilized by a strong magnetic shear and a close proximity of a highly conducting chamber wall. However, for a specific case of ideal internal cylindrical kink modes with the rational surfaces located at or near the axis of the cylinder the stabilizing effects of the magnetic shear and the conducting wall are significantly reduced. The possibility of destabilization of the on-axis ideal modes has been predicted in the past for the RFP plasma[1,2]. We revisit and extend this problem by developing a non-stationary theory of on-axis ideal modes which can be applicable to experimentally observed sawtooth variations of the mean magnetic field in the Madison Symmetric Torus RFP experiment. The interrelationship between theoretical and experimental results is discussed. [1] D. C. Robinson, Nuclear Fusion, **18**, 7 (1978). [2] S. Ortolani, D. D. Schnack, "*Magnetohydrodynamics of Plasma Relaxation*", World Scientific Publishing Co., Singapore (1993).

[1]Work supported by the U.S. D.O.E.

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Date submitted: 13 Jan 2009 Electronic form version 1.4