

Abstract Submitted
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Control of tearing modes in reversed field pinches above the ideal-wall tearing threshold JOHN M. FINN, GIAN LUCA DELZANNO, Los Alamos National Laboratory — We have performed stability studies for RFP profiles with a resistive wall and with feedback based on sensing both the normal and tangential components of the magnetic field at the wall. In [Finn, J. M., Phys. Plasmas 13, 082504 (2006)] feedback results were obtained with a simple model using reduced resistive MHD. These results indicated that it is possible to stabilize resistive plasma modes above the ideal wall limit; it was found not to be possible to stabilize ideal plasma modes above their ideal wall threshold. The RFP model in this earlier paper involved a decreasing q profile, but of course the reduced MHD model is not an accurate model for an RFP. We have generalized these results to full resistive MHD in cylindrical geometry with RFP-like profiles. The results indicate as before that it is possible to stabilize above the tearing - ideal wall threshold but not above the ideal MHD ideal wall threshold. We will show the impact of the feedback schemes on several modes present in the system and present our interpretation.

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