

Abstract Submitted  
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**Initial Ferritic Wall Mode studies on HBT-EP**<sup>1</sup> PAUL HUGHES, J. BIALEK, A. BOOZER, M.E. MAUEL, J.P. LEVESQUE, G.A. NAVRATIL, Columbia Univ — Low-activation ferritic steels are leading material candidates for use in next-generation fusion development experiments such as a prospective US component test facility and DEMO [1]. Understanding the interaction of plasmas with a ferromagnetic wall will provide crucial physics for these experiments. Although the ferritic wall mode (FWM) was seen in a linear machine [2], the ferritic steel was observed to be compatible with high-performance operation in JFT-2M [3]. Using its high-resolution magnetic diagnostics and adjustable wall segments, HBT-EP now operates successfully with a high-permeability ( $\mu \sim 8$ ) tiled ferritic first wall and is exploring the dynamics and stability of kink modes interacting with the ferritic tiles. In this poster, we report the first studies of the evolution of naturally rotating modes, increased plasma response to phase-flip resonant magnetic perturbations (RMPs) [4], and enhanced plasma disruptivity as wall configuration is adjusted from stainless wall to ferritic wall configuration.

[1] Kurtz, R.J., et. al. 2009 **J Nucl Mater** 386-388

[2] Bergerson, W., et. al. 2008 **Phys Rev Lett** 101

[3] Tsuzuki, K., et. al. 2006 **Nucl Fus** 46

[4] Shilov, M., et al. 2004 **Phys. Plasmas** 11, 2573

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