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Initial Ferritic Wall Mode studies on HBT-EP¹ PAUL HUGHES, J. BIALEK, A. BOOZER, M.E. MAUEL, J.P. LEVESQUE, G.A. NAVRATIL, Columbia University — 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 FWM was not observed in JFT-2M [3], probably due to eddy current stabilization. Using its high-resolution magnetic diagnostics and positionable walls, HBT-EP has begun exploring the dynamics and stability of plasma interacting with high-permeability ferritic materials tiled to reduce eddy currents. We summarize a simple model for plasma-wall interaction in the presence of ferromagnetic material, describe the design of a recently-installed set of ferritic shell segments, and report initial results.

[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

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