Abstract Submitted
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Design of Wall Segments for Ferritic Wall Mode Studies on HBT-EP[1] 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 be crucial physics for these experiments. Although there has been a linear FRWM experiment [2], the FRWM has not yet been observed in toroidal geometry. Using its high-resolution magnetic diagnostics, HBT-EP will explore the dynamics and stability of plasma interacting with ferromagnetic materials. We describe simple models [3] for plasma-wall interaction in the presence of ferromagnetic material, and compare material options for magnetic properties, cost, and ease of fabrication. Also, initial modeling, design, and installation of moderate permeability ($1 < \mu < 10$) wall segments on HBT-EP will be discussed.

[1] Kurtz, R.J., et. al. 2009 *J Nucl Mater* **386-388**
[2] Bergerson, W., et. al. 2008 *Phys Rev Lett* **101**
[3] Kurita, G., et. al. 2003 *Nucl Fus* **43** 949-954

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