

Abstract Submitted
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Design of Wall Segments for Ferritic Wall Mode studies on HBT-EP P. HUGHES, J. BIALEK, A.H. BOOZER, M.E. MAUEL, D.A. MAURER, 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 an analysis of the plasma-wall coupling constant as a function of ferritic segment configuration and plasma position, as well as comparing material options for magnetic properties, cost, and ease of fabrication. Also, initial modeling, design, and installation of moderate permeability ($\mu \approx 5$) wall segments on HBT-EP will be discussed. Supported by U.S. DOE Grant DE-FG02-86ER53222.

- [1] KURTZ, R.J., ET AL. 2009 *J Nucl Mater* **386-388**, 411-417.
[2] BERGERSON, W., ET AL. 2008 *Phys Rev Lett* **101**, 235005.

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