Abstract Submitted
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Ferritic wall studies on HBT-EP[1] PAUL E. HUGHES, J.P. LEVESQUE, M.E. MAUEL, G.A. NAVRATIL, Columbia Univ — Low-activation ferritic steels are leading material candidates for use in next-generation fusion development experiments such as ITER and DEMO. Understanding the interaction of plasmas with a ferromagnetic wall will provide crucial physics for these experiments. Although the ferritic wall mode (FWM) was not observed in JFT-2M [1], it has been been studied in HBT-EP [2], while the effects of related error fields have been studied on DIII-D [3]. HBT-EP operates with a high-permeability tiled ferritic first wall, characterizing its MHD effects using high-resolution magnetic diagnostics. We report on our study of FWM dynamics comparing stainless and ferritic wall configurations, including increases in plasma response to RMPs, plasma disruptivity, and natural mode growth [2,4]; new results include differences in scrape-off layer (SOL) current dynamics and mode rotation frequency dependence of the FWM growth rate [4]. Additionally, we present the effects of toroidally asymmetric distribution of ferromagnetic material on mode rotation.

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