Abstract Submitted
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Investigation of turbulence and fast rotating MHD during biased H-mode on HBT-EP[1] I.G. STEWART, J.W. BROOKS, J.P. LEVESQUE, M.E. MAUEL, G.A. NAVRATIL, Columbia University — Suppression of turbulence and turbulent transport by sheared flow has been widely recognized as a means to improve confinement in tokamaks. Using a biased electrode on HBT-EP, a strong layer of sheared ExB flow forms at the plasma edge and an improvement in confinement has been observed in what has been termed a biasing induced H-mode. A scan of potential fluctuations reveals the suppression of turbulence is highest where the shear in the electric field is greatest, yielding a complex radial structure. Power spectra analysis indicates that most of the suppression occurs in the range of frequencies corresponding to the largest eddy size (between 10 and 100 kHz). The poloidal wavenumber-frequency spectrum of the turbulence is also dramatically modified between unbiased and biased periods. Additionally, the dynamics of fast rotating MHD modes, made possible by the relatively large radial extent of the electric field well (20% of the minor radius), are analyzed.

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