Abstract Submitted
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Energetic-Electron-Driven Alfvénic Modes in HSX[1] C. DENG, D.L. BROWER, Electrical Engineering Department, UCLA, D.A. SPONG, Oak Ridge National Laboratory, Oak Ridge, Tennessee, A. ABDOU, A.F. ALMALGRI, D.T. ANDERSON, F.S.B. ANDERSON, K. LIKIN, S. OH, V. SAKAGUCHI, J. SCHMITT, J.N. TALMADGE, K. ZHAI, HSX Plasma Laboratory, UW-Madison
— Coherent, global fluctuations in the range of 20-120 kHz are observed for quasi-helically-symmetric ECRH produced plasmas in HSX. Calculations of the Alfvn continua for the n = 1 mode show the measured fluctuations fall in a gap below the m=1 resonance corresponding to a global Alfvn eigenmode (GAE). Fast electrons associated with 2nd harmonic X-mode ECRH are thought to drive the instability. The measured frequency range as well as scaling with ion mass density is consistent with Alfvenic modes. When quasi-helical symmetry is broken, the mode is no longer observed. Flows generated by a biased electrode modify the mode amplitude and frequency. Under these conditions, the fluctuation is even observed in the conventional stellarator configuration. The relation between mode amplitude, flows and growth rates will be explored.

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