Abstract Submitted
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Studies of Energetic-Electron-Driven Alfvénic Modes in HSX[1] C. DENG, D.L. BROWER, Dept. of Electrical Engineering, UCLA, D.A. SPONG, Oak Ridge National Laboratory, Oak Ridge,Tennessee, A.F. ALMAGRI, D.T. ANDERSON, F.S.B. ANDERSON, A. HERR, K. LIKIN, J. LU, S. OH, 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 2^{nd} Harmonic X-mode ECRH produced plasmas in HSX. Measurements and theory indicate that the mode is likely the global Alfvén eigenmode (GAE). Dependence of mode amplitude and frequency with heating power (electron temperature) will be measured using up to 200 kW of ECRH. Plasma stored energy loss related to onset of GAE mode activity will be explored. Preliminary results indicate that the toroidal precession of energetic electrons might be responsible for driving and resonant to the mode. Measurements indicate the mode has helicity m/n=1/1, and inversion of interferometry data shows the amplitude peaks in the region of steepest density gradient (r/a=0.4). Newly constructed magnetic coil arrays will be used to provide further information.

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