# Fast-Electron-Driven Instabilities in the HSX Stellarator

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Magnetohydrodynamic activity driven by fast electrons associated with electron cyclotron resonance heating is observed in the quasi-helically symmetric HSX device. Fluctuations in the frequency range 20-120 kHz are measured and have an m=n=1 structure. They are coherent and global, peaking in the plasma core. Radial structure is obtained by inversion of line-integrated interferometry data using the known mode helicity. The measured frequency range as well as scaling with electron density and ion mass are consistent with theoretical predictions for the global Alfvén eigenmode. Mode frequency dependence on plasma pressure and vacuum rotational transform is also explored and suggests a coupling with the geodesic acoustic mode (GAM). When quasi-helical symmetry is broken, fast electron confinement deteriorates and the mode is no longer observed. *Work supported by USDOE.