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**Experimental investigation of the physics controlling core-localized compressional and global Alfvén eigenmode spectra, structure, and amplitude in NSTX-U**[1] SHAWN TANG, N.A. CROCKER, T.A. CARTER, UCLA, E.D. FREDRICKSON, W. GUTTENFELDER, N.N. GORELENKOV, PPPL, NSTX-U TEAM — Electron thermal confinement in NSTX was observed to deteriorate with increasing toroidal field and beam power, which potentially has significant implications for NSTX-U. The leading candidates for this anomalous electron transport are high-frequency Alfvén eigenmodes excited through Doppler-shifted cyclotron resonance with beam ions [D. Stutman, et al., *PRL* 2009]. These modes were identified as compressional (CAE) and global (GAE) Alfvén eigenmodes [N.A. Crocker, et al., *NF* 2013]. The potential impact of these modes motivates the investigation of the physics controlling their spectra, structure, and amplitude. A database of neutral beam heated NSTX shots spanning a broad range of plasma parameters has been compiled to investigate fast-ion driven mode activity [E.D. Fredrickson, et al., *NF* 2014]. This database is extended to include measures of CAE/GAE activity in order to statistically investigate the physics parameters controlling the characteristics of these modes and how they contribute to anomalous electron transport. We show preliminary results of this investigation.

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