Abstract Submitted
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Investigation of Alfvén eigenmode structure in NSTX and MAST[1] N.A. CROCKER, UCLA, J.C. HILLESHEIM, CCFE, W.A. PEEBLES, UCLA, E.D. FREDRICKSON, M. PODESTÀ, PPPL, K. TRITZ, JHU, S. KUBOTA, UCLA, H. MEYER, CCFE — Alfvén eigenmodes (AEs) play critical roles in fusion research plasmas. Low frequency (f $\lesssim$ 100 kHz) toroidicity-induced (TAE) and reverse-shear (RSAE) AEs cause significant fast-ion transport. High frequency (f $\gg$ 100 kHz) global (GAE) and compressional (CAE) AEs are correlated with enhanced thermal electron transport. Investigation of these modes in the National Spherical Torus eXperiment (NSTX) and the Mega Amp Spherical Tokamak (MAST) have been facilitated by a 16 channel, 30 – 75 GHz fixed-frequency quadrature system implemented for reflectometry in NSTX and recently adapted for reflectometry and Doppler backscattering (DBS) in MAST. As a reflectometer array, the system has probed the spatial structure of AE density perturbations. As a DBS array, it has provided localized phase velocity measurements of the intermediate-k turbulence (k $\sim 4-12$ cm^{-1}), which are expected to yield the fluctuating ExB velocities, and thus the structure of the E perturbation, associated with AEs.

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