Fast Ion Induced Shearing of Alfvén Eigenmodes Measured by 2D Electron Cyclotron Emission Imaging

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Abstract. Two-dimensional images of electron temperature perturbations are obtained with Electron Cyclotron Emission Imaging (ECEI) on the DIII-D tokamak and compared to Alfvén eigenmode structures obtained by numerical modeling using both ideal MHD and hybrid MHD-gyrofluid codes. While many features of the observations are found to be in excellent agreement with simulations using an ideal MHD code (NOVA), other characteristics distinctly reveal the influence of fast ions on the mode structures. These features are found to be well described by the non-perturbative hybrid MHD-gyrofluid model TAEFL.

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