Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

Ideal kink and neoclassical tearing mode identification in DIII-D with ECE HAILIN ZHAO, MAX AUSTIN, MICHALE BROOKMAN, WILLIAM ROWAN, University of Texas at Austin, R.J. LA HAYE, General Atomics — Detection of neoclassical tearing modes (NTMs), which can degrade plasma confinement or cause disruptions, is important in tokamaks. We have developed a code to cross-correlate ECE/magnetics data to get the amplitude and phase profiles of the electron temperature (Te) oscillation caused by the rotating magnetic island and/or a kink. It has been observed that the ΔTe amplitude on the two sides of the island center can be very different in some discharges. Also, a discrepancy often exists between the location of the rational q surface according to MSE-constrained EFIT and the location of island center according to ECE; this can be an issue for ECCD suppression of NTMs. We explore the possible causes of these two phenomena in terms of ECE location and calibration accuracy. By analyzing the Te fluctuation phase evolution after a large sawtooth crash which triggers an NTM, the presence of a kink-like mode before the onset of NTM can be discerned. Work supported by the US DOE under DE-FG02-97ER54415 and DE-FC02-04ER54698.

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Date submitted: 24 Aug 2017 Electronic form version 1.4