

**Abstract Submitted for the 53rd Annual Meeting
Division of Plasma Physics
November 14-18, 2011, Salt Lake City, Utah**

Category Number and Subject: 5.6.2. DIII-D Tokamak &
5.7.0 Diagnostics

Theory Experiment Combined/General

ECE-Imaging of the H-mode Pedestal,* B.J. Tobias, R. Nazikian, *PPPL*; C.W. Domier, N.C. Luhmann, Jr., *U. California-Davis*; M.E. Austin, *U. Texas-Austin* – ECE-Imaging has become a powerful diagnostic tool for optically thick core regions of tokamak plasmas, and a new synthetic diagnostic has now been applied to address questions of uniqueness in the interpretation of ECE-Imaging data from the plasma edge. Results pertaining to ELMs and externally applied 3D magnetic fields are presented herein. It has been shown that high pedestal pressure generally ensures adequate optical thickness very near the plasma edge, and that images from the pedestal and optically grey or thin regions beyond may be understood through a careful modeling of the interplay of emission and absorption along chords which exhibit short scale length inhomogeneities. A correlation analysis in the presence of MHD activity is consistent with kinetic modeling which predicts a spectral broadening of EC emission within the pedestal, accounting for anomalous emission that is routinely observed at frequencies well below the cold resonance frequency of the plasma edge.

*Work supported by US DOE under DE-AC02-09CH11466, DE-FG02-99ER54531 and DE-FG03-97ER54415.