Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

Bandwidth Doubling Upgrade for DIII-D Electron Cyclotron Emission Imaging Diagnostic System J. LAI, L. YU, X. KONG, B. TOBIAS, C.W. DOMIER, N.C. LUHMANN, JR., UC DAVIS — A dual-array Electron Cyclotron Emission Imaging (ECEI) system recently installed on the DIII-D tokamak has generated exciting time-resolved images of electron temperature profiles and fluctuations. In its current configuration, this double down-conversion heterodyne system has a total of 320 channels (20 vertical by 16 radial), with each array spanning an intermediate frequency (IF) range of 2 GHz to 9.2 GHz or approximately 15 cm of radial coverage. New ECEI electronics are being developed which will greatly increase the radial coverage of each array by extending the instantaneous IF coverage to a minimum of 2 to 15 GHz while simultaneously increasing the number of radial channels of each array to 16. Details regarding three different frequency extender approaches under investigation will be presented together with test results from each approach. The impact of this ECEI upgrade on planned MHD and turbulence experiments and studies on DIII-D will also be addressed. *Work supported by U.S. DOE Grants DE-FG02-99ER54531 and DE-AC02-76CHO307, POSTECH, and by NWO and the Association EURATOM-FOM.

Calvin Domier
UC Davis

Date submitted: 16 Jul 2010 Electronic form version 1.4