ECE Imaging upgrade for ELM imaging measurement on DIII-D[1] YILUN ZHU, YAN WANG, University of California at Davis, BENJAMIN TOBIAS, Los Alamos National Lab, JO-HAN YU, ANH-VU PHAM, CALVIN DOMIER, CHEN LUO, University of California at Davis, AHMED DIALLO, GERRIT KRAMER, YANG REN, RAFFI NAZIKIAN, Princeton Plasma Physics Laboratory, MING CHEN, NEVILLE LUHMANN.JR, University of California at Davis — DIII-D ECEI uses liquid crystal polymer (LCP) substrates to combine System-on-Chip receivers with on-board LO multiplication and amplification inside a fully shielded, modular package. It improves x30 sensitivity compared to existing one, while significantly reducing EM interference, environmental noise, and radiation bursts, thereby improving ELM studies in the most ITER relevant, low-collisional regimes on DIII-D. Noise bursts that have been troublesome for ECEI of ELMs have been classified into different types: some indicate important processes involving reconnection and the acceleration of non-thermal electrons, while out-of-band interference had been removed. The upgrade facilitates studies on disruption avoidance during RF heating by static and not rotating MHD. The upgraded system can be used to infer RF heating deposition profiles with absolutely calibrated Te measurements.

Yilun Zhu
University of California at Davis

Electronic form version 1.4