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**Investigation of Plasma Instabilities by Fast Profile Reflectometer Measurements in DIII-D**<sup>1</sup> L. ZENG, G. WANG, E.J. DOYLE, T.L. RHODES, W.A. PEEBLES, UCLA, G.R. MCKEE, R. FONCK, U. Wisconsin, K.H. BURRELL, GA, R.A. MOYER, UCSD, J.C. ROST, MIT — Profile modifications associated with plasma instabilities have been studied using a variety of diagnostics and in particular a fast profile reflectometer system. In Quiescent Double Barrier (QDB) plasmas, high spatial and temporal resolution measurements show the SOL density profile is modulated at the fundamental frequency of the Edge Harmonic Oscillation (EHO). The EHO is a continuous magnetic and electrostatic oscillation and is believed to provide the edge particle transport necessary for the QDB regime. A comparison between reflectometer and other diagnostic measurements regarding the EHO density fluctuation profile is presented. In contrast, during ELMing H-mode plasmas, the edge density profile evolution is tracked during ELMs, showing that the density profile expands to the vessel wall at the onset of Type 1 ELMs, indicating enhanced particle and energy transport to the vessel wall.

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L. Zeng  
zeng@fusion.gat.com  
University of California, Los Angeles

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