

Abstract Submitted  
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**2D Imaging of ELM Structures Using Microwave Imaging Reflectometry**<sup>1</sup> HANNAH HOFFMANN, MIT, B.J. TOBIAS, PPPL — 2D images of density perturbations due to plasma edge instabilities have been obtained using microwave imaging reflectometry (MIR). Edge-localized modes (ELMs) are fast-growing instabilities that can locally deposit heat and particles, which can be very detrimental to plasma-facing components. The mitigation and suppression of these instabilities on ITER is therefore an area of active research. Prior attempts to image temperature perturbations of ELMs with the electron-cyclotron emission imaging (ECEI) diagnostic were confounded by unexplained “bursts” of intense millimeter wave emission. However, MIR is not sensitive to these bursts, and provides long-sought 2D density fluctuation data. Using this data, changes in mode structure have been correlated with changes in ELM behavior, providing important insights into possible methods of ELM control. Additionally, by simultaneously using ECEI we can explore the relationship between mode structure and the bursts.

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