Abstract Submitted
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Laboratory Investigation of the Phase Reconstruction by Microwave Imaging Reflectometry[1] I. HONG, W. LEE, M. KIM, Y. NAM, J. LEEM, G.S. YUN, H.K. PARK, Postech, N.C. LUHMANN, JR., C.W. DOMIER, University of California, Davis — Microwave Imaging Reflectometry (MIR) has been developed for a precise measurement of 2D electron density fluctuations in fusion plasmas. The MIR can overcome the limitations of the conventional reflectometry by minimizing the loss of phase information with large imaging optics and an array of detectors. The precise design of optics and detection system is critical for the reconstruction of the fluctuations. The integrated system of the KSTAR MIR optics and detector system has been tested using a corrugated solid target representing the density fluctuations at the cutoff surface. The reconstructed phase has been compared to the direct measurement of corrugations considering the rotational speed of the target. The influence of optical aberrations and imperfection of the optical components on the phase reconstruction have been studied by the 2D phase/amplitude measurement of the reflected beam and diffraction-based optical simulations.

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