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Reflectometry Characterization of Edge Density Fluctuations During ELMy H-Modes in NSTX[1] S. KUBOTA, N.A. CROCKER, UCLA, A. DIALLO, S.M. KAYE, R. MAINGI, PPPL — Understanding the role of instabilities that govern the properties of the H-mode pedestal is an important research topic for existing and future magnetic fusion devices. In a previous study (A. Diallo et al., Phys. Plasmas **20**, 012505), fluctuations in the pedestal of ELMy H-modes in NSTX were characterized using BES and reflectometry. With respect to the reflectometry analysis, the fluctuation model used for the 2-D full-wave analysis in that work assumed fully-developed turbulence characterized by Gaussian statistics. In the present work, data from the 30-75 GHz fixed-frequency reflectometer (16 channels, radially and toroidally separated) is used in conjunction with 3-D physical optics and full-wave calculations to determine the spatial structure and additional characteristics of the edge fluctuations. The analysis of the reflectometer data suggests that edge electron density fluctuations are dominated by long-lived ($\tau_{\rm decorr}\sim$several 100 μs) coherent structures. The largest structures are found to be poloidally localized (width $\sim$3 cm) with a dipole shape, and elongated in the direction of the magnetic field. Further information about the reflectometry analysis, as well a detailed description of the edge fluctuations, will be presented.

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