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Investigating small-scale edge turbulence with the NSTX-U GPI diagnostic NOAH MANDELL, Princeton University, STEWART ZWEBEN, WALTER GUTTENFELDER, YANG REN, PPPL, STEVE SABBAGH, Columbia University — The Gas Puff Imaging (GPI) diagnostic on NSTX has previously been used to measure medium-scale edge turbulence with correlation lengths L_{pol}, L_{rad} $\sim$ 2 - 20 cm, corresponding to $k_\perp \rho_s \sim$ .1 - 1. Some smaller-scale structures down to $\sim$ 1 cm were occasionally observed, but not very clearly. Therefore the GPI optics have been upgraded using a new zoom lens system to investigate smaller-scale structures down to a scale length of 1 mm for NSTX-U. We present the previous best measurements of small-scale structure in GPI, and compare them with prior observations from the high-k scattering diagnostic on NSTX, and with calculations of ETG and microtearing modes in NSTX. We also present details on the new optics, and describe the effects of field line curvature on limiting the spacial resolution of the GPI system.

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