

Abstract Submitted
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The NSTX BES System for Measuring Small-Scale Density Fluctuations¹ N.L. SCHOENBECK, R.J. FONCK, G.R. MCKEE, D.R. SMITH, D. THOMPSON, I.U. UZUN-KAYMAK, University of Wisconsin-Madison, B.C. STRATTON, PPPL — A new Beam Emission Spectroscopy (BES) diagnostic has been deployed at the NSTX. It exploits new detectors and optical systems adapted to the large pitch angles on the spherical torus. The detectors consist of surface-mount, wide-area photoconductive photodiodes and a new frequency-compensated broadband preamplifier to achieve photon-noise limited measurements. Advantages of the new system include an increased effective bandwidth of 1 MHz and elimination of the need for cryogenic cooling. First measurements have been obtained using 16 channels, with plans to expand to 32 in the near future. These measurements show coherent and broadband plasma turbulence in high gradient regions, and coherent modes that mainly correlate with Alfvén/energetic particle modes. To support these BES experiments at NSTX and similar ones at DIII-D, Langmuir probe measurements in PEGASUS ST plasmas are being evaluated for validation of velocimetry techniques using 2D BES \tilde{n} measurements.

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