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Simultaneous 2D Doppler backscattering from edge turbulence<sup>1</sup> DAVID THOMAS, University of York & Culham Centre for Fusion Energy, KAI BRUNNER, Durham University, SIMON FREETHY, Max-Plank-Institut fuer Plasmaphysik, BILLY HUANG, FPGA Advanced Instrumentation Technologies, VLADIMIR SHEVCHENKO, Culham Centre for Fusion Energy, RODDY VANN, University of York — The Synthetic Aperture Microwave Imaging (SAMI) diagnostic (previously at MAST and now at NSTX-U) actively probes the plasma edge using a wide (80 degree beam width) and broadband (10-34.5 GHz) beam. It digitizes the phase and amplitude of the Doppler backscattered signal using a receiving array of eight antennas which can be focused in any direction post shot to an angular range of 6-24 degree FWHM. This allows Doppler BackScattering (DBS) experiments to be conducted in every direction within the field of view simultaneously. This capability is unique to SAMI and is a novel way of conducting DBS experiments. SAMI has measured the magnetic pitch angle in the edge for the first time using a backscattering diagnostic. This is possible with simultaneous 2D DBS because the maximum backscattered power is perpendicular to the turbulence and turbulence is elongated along the magnetic field. SAMI has also studied the effect of NBI and the L-H transition on turbulent velocity, and turbulence suppression in the edge during H-mode. Initial results from all of these studies will be presented.

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