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Synthetic Aperture Microwave Imaging (SAMI) of the plasma edge on NSTX-U RODDY VANN, University of York, GARY TAYLOR, Princeton Plasma Physics Laboratory, JAKOB BRUNNER, Durham University, BOB ELLIS, Princeton Plasma Physics Laboratory, DAVID THOMAS, University of York — The Synthetic Aperture Microwave Imaging (SAMI) system is a unique phased-array microwave camera with a $\pm 40°$field of view in both directions. It can image cut-off surfaces corresponding to frequencies in the range 10-34.5GHz; these surfaces are typically in the plasma edge. SAMI operates in two modes: either imaging thermal emission from the plasma (often modified by its interaction with the plasma edge e.g. via BXO mode conversion) or "active probing" i.e. injecting a broad beam at the plasma surface and imaging the reflected/back-scattered signal. SAMI was successfully pioneered on the Mega-Amp Spherical Tokamak (MAST) at Culham Centre for Fusion Energy [Shevchenko *et al.*, *JINST* **7** P10016 (2012); Thomas *et al.*, *Nucl. Fusion* **56** 026013 (2016)]. SAMI has now been installed and commissioned on the National Spherical Torus Experiment Upgrade (NSTX-U) at Princeton Plasma Physics Laboratory. The firmware has been upgraded to include real-time digital filtering, which enables continuous acquisition of the Doppler back-scattered active probing data. In this poster we shall present SAMI's analysis of the plasma edge on NSTX-U including measurements of the edge pitch angle on NSTX-U using SAMI's unique 2-D Doppler-backscattering capability.

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