

Abstract Submitted  
for the DPP05 Meeting of  
The American Physical Society

**Plasma Flow Measurements on NSTX using the SWIFT (Shifted Wavelength/Interference Filter Technology) diagnostic**<sup>1</sup> STEPHEN PAUL, ROBERT KAITA, LANE ROQUEMORE, BRETT MCGEEHAN, Princeton Plasma Physics Laboratory, NOBUHIRO NISHINO, Hiroshima University — The crossed interference filter technique for measuring ion flows is being extended from individual analog channels (as implemented on Columbia University's HBT-EP device) to an entire 2-D view on NSTX. A 40, 500 frame per second Ultima SE CMOS digital camera, manufactured by Photron, Ltd. is being used to view He II emission at 486.6 nm from the inside edge of the plasma on both sides of the center stack. In this way, both blue and red shifts are being monitored so an unambiguous measurement of parallel flow is available. The image is split and filtered with separate interference filters with precisely calibrated opposite linear slopes. Careful white-plate calibration of the 64 x 64 pixel detector is necessary, but once completed, the ion velocity can be calculated very simply from the ratio of the intensities from the two images. By comparing these measurements with the Edge Rotation Diagnostic on NSTX, asymmetries in parallel flows between the inboard and outboard edges of the spherical tokamak plasma will be able to be measured. A second experiment involves measuring the outward radial flow of clusters of helium ions ('blobs') at the outer edge of the plasma.

<sup>1</sup>Supported by U.S. DOE contract DE-AC02-76CH03073.

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Date submitted: 26 Jul 2005

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