

Abstract Submitted
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Development of an Internet-Enabled Tool for NSTX-U Thomson Diagnostic Data¹ WILLIAM WALLACE, Laney College, AHMED DIALLO, Princeton Plasma Physics Laboratory, Princeton, New Jersey — MultiPoint Thomson Scattering (MPTS) is an established, accurate method of finding the temperature, density, and pressure of a magnetically confined plasma. Two Nd:YAG (1064 nm) lasers are fired into the plasma with a effective frequency of 60 Hz, and the light is Doppler shifted by Thomson scattering. Polychromators on the NSTX-U midplane collect the scattered photons at various radii/scattering angles, and the avalanche photodiode voltages are saved to an MDSplus tree for later analysis. IDL code is then used to determine plasma temperature, pressure, and density from the captured polychromator measurements via Selden formulas.[1] OMFIT, from the General Atomics Fusion Theory Team, is a rich data workflow package used on DIII-D, NSTX-U, and other experiments to rapidly investigate and draw conclusions from collated data sets and simulations. OMFIT can also be used as a data access source into other toolkits and fusion analysis software. This project, written in Python and taking advantage of late-generation Internet software technologies, uses OMFIT to rapidly find and visualize Thomson diagnostic plasma characteristics enabling scientists to gain a quick understanding of shot behavior and timeframes.

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