

Abstract Submitted  
for the DPP17 Meeting of  
The American Physical Society

**Progress On The Thomson Scattering Diagnostic For The Helicon Plasma Experiment (HPX)** A. GREEN, T. EMAMI, R. DAVIES, J. FRANK, J. HOPSON, J. KARAMA, R.W. JAMES, J. HOPSON, R.N. PAOLINO, E. SANDRI, J. TURK, M. WICKE, U.S. Coast Guard Academy, CGAPL TEAM — A high-performance spectrometer utilizing volume-phase-holographic (VPH) grating and a charge coupled device (CCD) camera with a range of 380-1090 nm and resolution of 1024x1024 has been assembled on HPX at the Coast Guard Academy Plasma Laboratory (CGAPL). This spectrometer will collect doppler shifted photons, emitted from the plasma by the first harmonic (1064 nm) of a 2.5 J Nd:YAG laser. Direct measurements of the plasma's temperature and density will be determined using HPX's Thomson Scattering (TS) single spatial point diagnostic system. A zero order half wave plate rotates the polarization of the second harmonic TS laser beam when operating at a wavelength of 532 nm. A linear actuated periscope has been constructed to remotely redirect the beam so that 532 and 1064 nm wavelengths can both be used. TS has the capability of determining plasma properties on short time scales and will be used to create a robust picture of the internal plasma parameters. Operating at both 532 and 1064 nm results in a self-consistent measurement and better use our existing spectrometer and soon to be constructed polychrometer. A prototype spectrometer has been constructed to explore the Andor CCD camera's resolution and sensitivity. The current status of the diagnostic development, spectrometer, and collection optics system will be reported.

Royce James  
U.S. Coast Guard Academy

Date submitted: 17 Jul 2017

Electronic form version 1.4