Abstract Submitted
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Spectrometer Development in Support of Thomson Scattering Investigations for the Helicon Plasma Experiment (HPX)[1] EVA SANDRI, RICHARD DAVIES, PHIL AZZARI, JOHN FRANK, JACKSON FRANK, ROYCE JAMES, JORDON HOPSON, OMAR DUKE-TINSON, RICHARD PAOLINO, JUSTIN SHERMAN, ERIN WRIGHT, JEREMY TURK, US Coast Guard Academy Plasma Lab — Now that reproducible plasmas have been created on the Helicon Plasma Experiment (HPX) at the Coast Guard Academy Plasma Laboratory (CGAPL), 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 is being assembled. This spectrometer will collect doppler shifted photons created by exciting the plasma with the first harmonic of a 2.5 J Nd:YAG laser at a wavelength of 1064 nm. Direct measurements of the plasma's temperature and density will be determined using HPX's Thomson Scattering (TS) system as a single spatial point diagnostic. 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. A prototype spectrometer has been constructed to explore the Andor CCD camera's resolution and sensitivity. Concurrently, through intensive study of the high energy TS system, safety protocols and standard operation procedures (SOP) for the Coast Guard's largest and most powerful Laser have been developed. The current status of the TS SOP, diagnostic development, and the collection optic's spectrometer will be reported.

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