

Abstract Submitted
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Particle Probe Investigations on the Helicon Plasma Experiment (HPX)¹ JUSTIN SHERMAN, R.W. JAMES, S. NOLAN, E.J. PAGE, B. ROMANO, J. ZUNIGA, C. SCHLANK, M. LOPEZ, J. KARAMA, O. DUKE-TINSON, B.S. STUTZMAN, Coast Guard Academy Plasma Lab — Coast Guard Academy Plasma Lab(CGAPL) has constructed a Helicon Plasma Experiment. Plasmas will be used in high-temperature and -density diagnostic development for future lab investigations of fusion-grade plasma. Efforts to develop and enhance high temperature and density (10^{13}cm^{-3} and up) helicon plasmas at low pressures (.01T) reported by Toki, et.al continue. HPX will integrate a 32-channel National Instruments DAQ(Data Acquisition) board, designed to digitize data from tests. With LabView as the programming language, CGAPL will take samples at 12bits of precision at 2MS/s to create a Graphical User Interface (GUI). The GUI will control experimental variables (one or several concurrent tests) and monitor systems during data collection. Data collection will be conducted with particle probes, currently under construction. Probes, used to discern the plasma mode transitions, will measure plasma particle velocity, temperature, density and floating potential at different regimes. Once independent triple and mach probes for surface point investigations are installed, a triple probe array to produce a more comprehensive density and surface view will follow. Progress on development of GUI and construction of probes will be reported.

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