

Abstract Submitted
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Updates to the Development of Low Pressure High Density Plasmas on the Helicon Plasma Experiment (HPX)¹ ROYCE JAMES, PHIL AZZARI, PAUL CRILLY, OMAR DUKE-TINSON, JACKSON KARAMA, RICHARD PAOLINO, CARTER SCHLANK, JUSTIN SHERMAN, TOORAN EMAMI, JEREMY TURK, United States Coast Guard Academy Plasma Lab — The small Helicon Plasma Experiment (HPX) at the Coast Guard Academy Plasma Lab (CGAPL), continues to progress toward utilizing the reputed high densities (10^{13} cm⁻³ and higher) at low pressure (.01 T) [1] of helicons, for eventual high temperature and density diagnostic development in future laboratory investigations. HPX is designed to create repeatedly stable plasmas (~20 - 30 ns) induced by an RF frequency in the 10 to 70 MHz range. HPX is constructing RF field corrected Langmuir probe raw data will be collected and used to measure the plasma's density, temperature, and potentially the structure and behavior during experiments. Our 2.5 J YAG laser Thomson Scattering system backed by a 32-channel Data Acquisition (DAQ) system is capable 12 bits of sampling precision at 2 MS/s for HPX plasma property investigations are being developed and tested. Progress on the construction of the RF coupling system, Helicon Mode development, and magnetic coils, along with observations from the Thomson Scattering, particle, and electromagnetic scattering diagnostics will be reported.

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