Abstract Submitted
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Progress on Pre-Stage Magnetic Coil to Enhance Helicon Mode Excitation and Data Acquisition Software on the Helicon Plasma Experiment (HPX)[1] JUSTIN SHERMAN, PHILLIP AZZARI, P.B. CRILLY, OMAR DUKE-TINSON, ROYCE W. JAMES, JACKSON KARAMA, E.J. PAGE, CARTER SCHLANK, JONATHAN ZUNIGA, US Coast Guard Academy Plasma Lab — CGAPL is conducting small investigations in plasma physics and magneto-hydrodynamics buoy positioning. For data management, we are developing capability to analyze/digitize data with a National Instruments Data Acquisition board, 2MS/s sampling rate (long time scale), and an Express Octopus card, 125MS/s sampling rate (short scale). Sampling at 12bits precision, we use LabVIEW as a programing language; GUIs will control variables in 1 or more concurrent runs and monitor of diagnostics. HPX utilizes high density(10^{13}cm^3 up), low pressure(.01 T) [1] Ar gas (fill pressure: on 10^4mTorr order). Helicon/W Mode plasmas become a diagnostics test-bed for other investigations and a tool for future spacecraft propulsion devices. Plasmas created by directing energy into gas-filled Pyrex tube; power supply and matching box, up to 250W power in 20-100MHz frequencies, provide energy to ignite. Uniform magnetic field needed to reach the W-Mode [1]. We employ an electromagnet to B-field while an acceleration coil positions plasma in vacuum chamber, facilitating analysis. Initial field requirements and accuracy calibration have been completed. Progress on development and implementation of probes and DAQ/GUI system will be reported. [1] K.Toki, et al, Thin Solid Films 506-507(2005)

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Justin Sherman
US Coast Guard Academy Plasma Lab

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