

Abstract Submitted
for the DPP12 Meeting of
The American Physical Society

Development of an Interferometer Diagnostic for the Spheromak Turbulent Physics Experiment (STPX)¹ JERRY CLARK, J. TITUS, A.B. ALEXANDER, E.D. MEZONLIN, Florida Agricultural & Mechanical University, Center for Plasma Science & Technology, Tallahassee, FL, STPX TEAM — Laser interferometry is a proven method for measuring electron density in fusion plasmas. Typically, far-infrared interferometers are used because of the large phase shift due to the change in the index of refraction of the plasma and their relative insensitivity to vibrations. A two-color (CO₂: $\lambda=10.6 \mu\text{m}$, HeNe: $\lambda=633 \text{ nm}$) interferometer has been designed for installation on STPX. The interferometer is a Mach-Zehnder configuration with a single-chord, double pass probe beam. The laser beams co-propagate along a 10-meter path for vibration subtraction along with frequency modulation for heterodyne detection. Detection is carried out using a HgCdTe photoconductor for the CO₂ and a Si APD for the HeNe. The capabilities and challenges with the installation of the interferometer on STPX will be discussed.

¹Work supported by grants from the US Department of Energy.

Jerry Clark
Florida Agricultural & Mechanical University

Date submitted: 16 Jul 2012

Electronic form version 1.4