

Abstract Submitted  
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**Radial Density Profile in the SSX Plasma Wind Tunnel using a Double Langmuir Probe**<sup>1</sup> D.L. WEINHOLD, K. FLANAGAN, T. GRAY, M.R. BROWN, Swarthmore College — We present preliminary results from a moveable double Langmuir probe in the present plasma wind tunnel configuration of SSX. The probe is designed to measure radial profiles of electron density ( $n_e$ ) and electron temperature ( $T_e$ ) across the midplane with a 1 *cm* resolution. Line-averaged densities from He-Ne interferometry show densities of  $1 - 5 \times 10^{15} \text{ cm}^{-3}$ . In addition to mean values, we will also present electrostatic fluctuations and correlations with magnetic field measurements. The double Langmuir probe also measures local  $T_e$ . Line-averaged measurements from VUV spectroscopy indicate  $T_e \sim 10 \text{ eV}$ . The Langmuir probe stalk diameter measures 6.5 *mm* and tip spacing is 1.1 *mm*. The SSX plasma wind tunnel has dimensions  $L \cong 1 \text{ m}$  and  $R = 0.08 \text{ m}$ . Plasma flow speeds are  $v \geq 50 \text{ km/s}$ . The cylindrical copper boundary and probe surfaces are baked and cleaned in a *He* glow discharge to maintain excellent vacuum and surface conditions. Electrostatic measurements during merging will be presented if available.

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Michael Brown  
Swarthmore College

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