

Abstract Submitted
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High frequency umbilical magnetic probe array for SSX wind tunnel¹ A.M. WERTH, T. GRAY, M.R. BROWN, Swarthmore College — The Swarthmore Spheromak Experiment (SSX) wind tunnel consists of a high velocity plume of magnetized plasma injected into a copper flux conserver with dimensions $L = 1\text{ m}$ and $R = 0.08\text{ m}$ (aspect ratio 10 : 1). The plasma spheromaks in this wind tunnel typically have densities on the order of $1 - 5 \times 10^{15}\text{ cm}^{-3}$ and flow speeds of 50 km/s . In the past, fluctuations and turbulence in the SSX plasma wind tunnel during magnetic reconnection have been examined by means of two high resolution (16 position at 0.46 cm spacing) radial magnetic probes. Results from the radial probes show high frequency magnetic fluctuations at the site of reconnection. Four more probes have been design to help detect magnetic fluctuations and reconnection activity along the axial direction of the wind tunnel. The four new probes have 8 positions at 0.95 cm spacing and have a flexible bellow in vacuum and a quartz jacket. The bellows act as an umbilical giving the probe excellent flexibility and versatility. The flexibility allows the probe to be bent so it lies along the axis of the flux conserver.

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