

Abstract Submitted  
for the DPP16 Meeting of  
The American Physical Society

**Magnetically Insulated Baffled Probe Measurement of Unfiltered Fluctuating Space Potential in the Texas Helimak**<sup>1</sup> M.E. KOEPKE, S.H. NOGAMI, V.I. DEMIDOV, West Virginia University, C.B. WILLIAMS, K. GENTLE, University of Texas — Success is reported in employing magnetically insulated baffled (MIB) probes [1] for the measurement of fluctuating space potential in the Texas Helimak [2]. The combination of the MIB probe and an unbaffled probe provides the necessary ingredients for determining cross-field transport without contamination between fluctuating space potential and electron temperature. The performance of the MIB probe is quantified by its ability to produce a probe characteristic with partially reduced magnitude of electron saturation current. The baffled probe employed in the 2016 experiments performed optimally (i.e., the magnitude of the electron saturation current is equal to the magnitude of the ion saturation current), meaning there is no difference between the probe floating potential and the space potential. The performance of the baffled probe is compared to the performance of the plug probe, tested in 2015 on the Texas Helimak [1]. Recent radial scans at the plasma edge of unfiltered fluctuating space potential are presented. [1] <http://meetings.aps.org/link/BAPS.2015.DPP.PP12.101> [2] PoP 21, 092302 (2014)

<sup>1</sup>Travel support from a Big XII Faculty Fellowship is gratefully acknowledged. Collaboration in probe construction with and experimental assistance by K. Carter are gratefully acknowledged.

Mark Koepke  
West Virginia University

Date submitted: 15 Jul 2016

Electronic form version 1.4