

Abstract Submitted
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Baffled-probe compact-cluster measurement of microturbulence and electron temperature fluctuation in the Texas Helimak¹ SH NOGAMI, ME KOEPKE, VI DEMIDOV, West Virginia Univ, KW GENTLE, CB WILLIAMS, Univ of Texas at Austin — In magnetized-orbit plasma, a baffled-probe compact cluster [1] acquires simultaneous real-time separate measurements of pure space potential, electric field, density, and electron temperature. Time-series analysis yields cross-correlated frequency and phase of the plasma parameter fluctuations and inference of electrostatic particle flux [2]. Radial ac and dc profiles of space potential, electric field, density, and electron temperature were measured in the Texas Helimak [3] in an attempt to quantify field and flow structure associated with specific states of microturbulence. Each state, characterized by magnetic field line connection length and applied radial electric field, is identified by signatures in the plasma parameters measured by a baffled-probe compact cluster. [1] Koepke et al., *Contrib. Plasma Phys.* 46, 359 (2006); Demidov et al., *Rev. Sci. Instrum.* 81, 10E129 (2010). [2] Gentle et al., <http://meetings.aps.org/Meeting/DPP16/Session/TP10.37> [3] Gentle and Huang, *Plasma Sci. Technol.* 10, 284 (2008).

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