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Experimental Measurements of the Dynamic Electric Field Topology Associated with Magnetized RF Sheaths[1] E.H. MARTIN, ORNL/NCSU, J.B.O. CAUGHMAN, ORNL, S.C. SHANNON, NCSU, C.C. KLEPPER, R.C. ISLER, ORNL — A major challenge facing magnetic fusion devices and the success of ITER is the design and implementation of reliable ICRH systems. The primary issue facing ICRH is the parasitic near-field which leads to an increased heat flux, sputtering, and arcing of the antenna/faraday screen. In order to aid the theoretical development of near-field physics and thus propel the design process experimental measurements are highly desired. In this work we have developed a diagnostic based on passive emission spectroscopy capable of measuring time periodic electric fields utilizing a generalized dynamic Stark effect model and a novel spectral line profile fitting package. The diagnostic was implemented on a small scale laboratory experiment designed to simulate the edge environment associated with ICRF antenna/faraday screen. The spatially and temporally resolved electric field associated with magnetized RF sheaths will be presented for two field configurations: magnetic field parallel to electric field and magnetic field perpendicular to electric field, both hydrogen and helium discharges where investigated.

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