

# **Statistical Properties of Electrostatic Fluctuations and Turbulent Cross-Field Fluxes in DIII-D SOL \***

D.L. Rudakov<sup>1</sup>, J.A. Boedo<sup>1</sup>, R.A. Moyer<sup>1</sup>, and J.G. Watkins<sup>2</sup>

<sup>1</sup>University of California-San Diego, La Jolla, California.

<sup>2</sup>Sandia National Laboratories, Albuquerque, New Mexico.

Fluctuations of the local plasma density, electron temperature, and floating potential are measured in the scrape-off-layer (SOL) of the DIII-D tokamak by a fast reciprocating probe array. Fluctuation-induced cross-field fluxes of particles and heat are derived from the measurements. Density and temperature fluctuations and fluxes in the SOL are strongly intermittent in time and space. Probability distribution functions (PDFs) of the fluxes are skewed in the outward direction and have more large transport events than could be expected for Gaussian statistics. Long data records (>250,000 usable points) obtained recently with the probe array kept at a fixed radial position in the SOL allowed us to study statistics of the quiet times between the transport events. We present a comparison of the quiet time statistics of the turbulent fluxes in the DIII-D SOL with those expected from the Self Organized Criticality (SOC) paradigm.

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