Abstract Submitted
for the DPP16 Meeting of
The American Physical Society

DIII-D W-rings experiment: testing the Deposition Probe Hypothesis[1] P.C. STANGEBY, U. Toronto, E.A. UNTERBERG, ORNL, D.L. RUDAKOV, UCSD, W.R. WAMPLER, SNL, D. DONOVAN, U. Tennessee, T. ABRAMS, GA — The hypothesis is tested that the deposition rate of W, which originates from toroidal W-rings at different poloidal locations in the DIII-D divertor, on a Deposition Probe (DP) in the outer midplane far SOL, is proportional to the W concentration in the confined plasma, c_W. The outer strike point, OSP, is placed on the inner edge of one of the W-rings. Small flux expansion ensures the other W-ring is not plasma-contacted. The source rate of W from the ring, s_W, is measured by line emission spectroscopy (WI 400.9 nm); also the deposition rate of W on the DP, d_W, using surface analysis; also the core concentration, c_W, inferred from core bolometry/spectroscopy. The experiment is repeated with the OSP placed half-way across the W-ring, thus reducing s_W by $\sim 2X$. The DP Hypothesis is tested by examining if $c_W \sim d_W \sim s_W$. This aids interpretation of the W-rings experiment since the DP probe, which is able to distinguish W-isotopes originating from the 2 isotopically-marked rings, can be used to infer c_W due to each ring when the plasma contacts both rings simultaneously.

[1]Work supported by the US DOE under DE-AC05-00OR22725, DE-FC02-04ER54698.

P.C. Stangeby
U. Toronto

Date submitted: 11 Jul 2016 Electronic form version 1.4