Abstract Submitted for the Forty-Ninth Annual Meeting
Division of Plasma Physics
November 12–16, 2007, Orlando, Florida

Category Number and Subject: 5.6.2. DIII-D Tokamak

[**X**] Theory [ ] Experiment

Indications of an Inward Pinch in the Inner SOL of DIII-D From ^{13}C Deposition Experiments,* J.D. Elder, P.C. Stangeby, A.G. McLean, *U. Toronto,* S.L. Allen, M.E. Fenstermacher, M. Groth, *LLNL*, J.A. Boedo, D.L. Rudakov, *UCSD*, B.D. Bray, N.H. Brooks, A.W. Leonard, W.P. West, *GA*, W.R. Wampler, J.G. Watkins, *SNL*, D.G. Whyte, *MIT* – ^{13}C methane puffing experiments were conducted on DIII-D in both L- and edge localized mode H-mode conditions. The puffing was toroidally symmetric into the crown of a series of well-characterized LSN discharges in which the plasma conditions, carbon emissions, core carbon increment and ^{13}C deposition pattern were measured. The hydrocarbon breakup and subsequent carbon transport were modeled using the OEDGE interpretive code. The carbon is followed in OEDGE until it deposits on surfaces. Replicating the experimental deposition requires assuming in the code both fast parallel transport as well as a pinch/drift in the inner scrape-off layer towards the separatrix of 10 to 20 m/s in both L and H mode. Radial variation of the fast parallel flow and re-erosion of carbon are investigated as alternative hypotheses to a pinch.

*Supported by the US DOE under W-7405-ENG-48, DE-FG02-04ER54758, DE-FC02-04ER54698, DE-AC04-94AL85000, and DE-FG02-04ER54762.