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Sorting Category: 6.6.2 (Experimental)

Neutral Density Measurements at the Midplane of DIII-D[1] R.J. COLCHIN, L.W. OWEN, R. MAINGI, R.C. ISLER, ORNL, N.H. BROOKS, T.N. CARLSTROM, R.J. GROEBNER, GA — Neutral densities have been measured across the separatrix at the outer midplane of DIII-D. The midplane measurements employ a new array of eight calibrated D_α tangentially-viewing monitors which span the outer separatrix just below the outer midplane in DIII-D. D_α intensities from these detectors, coupled with Thomson scattering measurements of the electron temperature and density, provide the information necessary to determine radial profiles of neutral density and ionization rates. Preliminary results show separatrix neutral densities $n_0 \sim 10^9 10^{10}$ atoms/cm^3 and $n_0/n_e \sim 10^{-4} - 10^{-3}$. These measurements, coupled with code calculations, are focused on the role that neutrals play in the L-H transition, and in plasma fueling. Midplane neutral densities are found to decrese at the L-H transition, whereas neutral densities peviously measured at the X-point[2] were found to increase slightly.

[1]Supported by US DOE Contracts DE-AC03-99ER54463 and DE-AC05-00OR22725.
[2]L.W. Owen, et al., Origins and Distributions of Core Fueling in the DIII-D Tokamak, submitted to J. Nucl. Materials.

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[X] Prefer Oral Session
[ ] Prefer Poster Session

Special instructions: 12th Oral presentation in DIII-D Session (to follow Mahdavi)

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