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Divertor Plasma Conditions and Pumping Efficiency in DIII-D¹ J.G. WATKINS, Sandia National Laboratories, M.A. MAHDAVI, T.C. LUCE, T.W. PETRIE, GA, M.R. WADE, R.J. COLCHIN, R.C. ISLER, R. MAINGI, ORNL, L.W. OWEN, S.L. ALLEN, M.E. FENSTERMACHER, C.J. LASNIER, G.D. PORTER, LLNL, J.A. BOEDO, R.A. MOYER, D. RUDAKOV, UCSD, P.C. STANGEBY, University of Toronto — This paper describes detailed studies of the upper divertor plasma and pump performance using the upper divertor pumping system for particle control of high triangularity discharges in DIII-D. Inner and outer cryopumps were used independently to control the removal of neutral particles from each divertor leg. Langmuir probes installed across the upper divertor surfaces were used to measure the plasma conditions during pumping. Significant changes in target plate profile shapes were observed as the strike point position was varied. Plasma interaction with divertor structures, such as the inner dome, can significantly affect the core plasma density. The direction of the magnetic field (and ExB drift) affects the total particle removal efficiency. H-mode densities less than $\langle n \rangle / n_G < 0.3$ have been achieved.

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