

**Abstract Submitted for the Forty-Ninth Annual Meeting
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Category Number and Subject: DIII-D Tokamak

Theory Experiment

Radiating Divertor Behavior in Single- and Double-Null Plasmas in DIII-D,* T.W. Petrie, N.H. Brooks, A.W. Hyatt, M.J. Schaffer, M.R. Wade, W.P. West, *GA*, M.E. Fenstermacher, M. Groth, C.J. Lasnier, *LLNL*, J.G. Watkins, *SNL* –The ability to concentrate impurities in the divertor region to provide effective radiative divertor operation has been found on DIII-D to be sensitive to the divertor magnetic geometry and the grad-B drift direction. Argon impurities were injected into the private flux region of one divertor, while deuterium flow into the divertors was simultaneously enhanced by a combination of midplane gas puffing and divertor cryopumping. For DN plasmas it was difficult to balance the radiated power between divertors during argon injection; significant increases in radiated power and argon concentration were observed mostly in the divertor that was *opposite* the grad-B drift direction. For SN plasmas, there was a higher divertor argon accumulation in the divertor when the grad-B drift direction was away from the dominant X-point, and so this setup may provide the best prospect of successfully coupling a radiating divertor approach to a high performance H-mode plasmas.

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