

Abstract Submitted
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Measuring the effect of divertor closure on detachment in DIII-D¹

AUNA MOSER, A.W. LEONARD, T.W. PETRIE, C.F. SANG, GA, S.L. ALLEN, A.G. MCLEAN, M.E. FENSTERMACHER, I. JOSEPH, C.J. LASNIER, M.A. MAKOWSKI, LLNL, J.G. WATKINS, SNL, A.R. BRIESEMEISTER, ORNL — Recent experiments compared the open lower divertor and semi-closed upper divertor in DIII-D to measure the effect of divertor closure on detachment onset and heat flux control, extending past work showing reduced core fueling with the more-closed upper DIII-D divertor. Experiments were performed to determine the extent to which closure may facilitate detachment at collisionalities more relevant to future devices. This work builds on previous experiments that quantified effects of divertor magnetic geometry, including connection length, ∇B -drift direction, incidence angle, and flux expansion; efforts were made to match these parameters while comparing single null configurations in the upper and lower divertor in order to isolate the effects of closure. Experimental measurements coupled with simulation results will help weigh the benefits of a more-closed divertor in facilitating detachment and reducing heat flux against the constraints imposed on the magnetic geometry by a more-closed divertor tile structure, aiding in the design of a future advanced divertor for DIII-D.

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