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**Importance of X-point Physics on the H-mode Power Threshold in DIII-D**<sup>1</sup> T.N. CARLSTROM, K.H. BURRELL, R.J. GROEBNER, A.W. LEONARD, T.H. OSBORNE, M.J. SCHAFFER, General Atomics — Edge parameters related to the density and temperature profiles are investigated in L-mode discharges where the only operational difference is the direction of the toroidal field. An examination of the edge plasma parameters for otherwise identical conditions of plasma current, toroidal field, heating power (1 MW), density, shape, etc., shows that there is very little change in the local edge parameters when the toroidal field direction is reversed, and yet the H-mode power threshold increases a factor of 3–5. Therefore, the increase in the power threshold with respect to the toroidal field direction is not due to a change in these local edge parameters. These results indicate that there is additional important physics of the L–H transition that is not associated with the outboard midplane plasma density and temperature profiles near the last closed flux surface. The divertor and x-point regions of the plasma show substantial changes with the toroidal field direction. We have begun to study these regions in the hope that they may provide insight into the physics of the L–H transition and further our understanding of the scaling of the H-mode power threshold.

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Prefer Oral Session  
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Special instructions: DIII-D Contributed Oral Session, immediately following EJ Doyle

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