

Abstract Submitted
for the DPP98 Meeting of
The American Physical Society

Sorting Category: 5.1.1.2 (experimental)

Measurements of Plasma Flow in the DIII-D Divertor¹

J. BOEDO, R.A. MOYER, University of California, San Diego, G.D. PORTER, C.J. LASNIER, Lawrence Livermore National Laboratory, M.J. SCHAFFER, T.E. EVANS, A.W. LEONARD, General Atomics, J.G. WATKINS, Sandia National Laboratories, R. MAINGI, Oak Ridge National Laboratory — The Mach number of the plasma flow, measured in the DIII-D divertor using a fast scanning Mach probe, is seen to approach unity in both the normal (toward the strike plate) and reversed directions, depending on the operating conditions. The measurements were made in lower single null divertor H-modes with attached and detached divertor plasmas. For attached conditions in ELMing H-mode, we observe plasma flow accelerating toward the plate, in agreement with classical expectations. As the neutral density in the divertor is increased, and the temperature drops, a narrow region of flow reversal at $1 \times 10^6 \text{ cm s}^{-1}$ develops at the separatrix, which is an important consideration for impurity screening. For detached divertor conditions, the plasma flows toward the plate at the sound speed over an extended region of the divertor, from the x-point to the plate. Heat and particle transport, under these conditions, are dominated by convection.

¹Work supported by U.S. DOE under Grant DE-FG03-95ER-54294 and Contracts W-7405-ENG-48, DE-AC03-89ER51114, DE-AC04-94AL85000, and DE-AC05-96OR22464.

☒ Prefer Oral Session
☐ Prefer Poster Session

J. Boedo
boedo@gav.gat.com
University of California, San Diego

| |
|---|
| Special instructions: DIII-D Oral Session II, immediately following Allen |
|---|

Date submitted: July 21, 1998

Electronic form version 1.3