

Abstract Submitted
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Langmuir-Mach Probe Geometries for Measurement of Total Flow Vector on Alcator C-Mod¹ N. SMICK, B. LABOMBARD, MIT PSFC

— Strong plasma flows are observed in the scrape-off layer in fusion devices. Recent data from Alcator C-Mod indicate that plasma flow along field lines is particularly strong on the high-field side, which appears to be driven by particle transport asymmetries [1]. However, owing to uncertainties in probe-sheath derived measurements of the plasma potential profile, the contribution of cross-field flows to the total flow vector has been difficult to unfold. For direct measurement of parallel and cross-field flows, we have begun to explore the use of a “Gundestrup”-type probe [2], adapted for the high-heat flux environment of C-Mod. Two different variations on a four-faceted tungsten electrode geometry have recently been operated, with facets tilted by 30 or 45 degrees with respect to magnetic flux surfaces in order to minimize surface heating. We report parallel and cross-field flow measurements, compared to standard Mach probes measurements and ExB flow estimates.

[1] B. LaBombard et al., Nucl. Fusion **44** (2004) 1047.

[2] MacLatchy, et al., Rev. Sci. Instrum. **63** (1992) 3923.

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