

Abstract Submitted
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Impurity Temperature and Velocity Profiles in L-mode and H-mode from the New Edge Charge Exchange Diagnostic on Alcator C-Mod¹ R.M. MCDERMOTT, B. LIPSCHULTZ, K. MARR, D. WHYTE, J.W. HUGHES, PSFC, MIT — The edge Charge Exchange Spectroscopy (CXS) system on Alcator C-Mod has been upgraded to include a beam viewing toroidal periscope. This periscope is designed to work in conjunction with the pre-existing edge poloidal CX periscope enabling concurrent measurements of the poloidal and toroidal velocity as well as the temperature and density of the B⁺⁵ ions in the edge pedestal region ($0.8 < r/a < 1.08$). Temporally resolved radial profiles of B⁺⁵ brightness, temperature, and velocity have been obtained in both L and H mode plasmas. Although the time resolution of the edge CXS diagnostic (6.2ms) is not sufficient to capture the evolution of edge profiles during standard L-H transitions, the temperature profiles obtained before and after the transition show excellent agreement with electron temperature measurements from the edge Thomson Scattering diagnostic. The obtained velocity profiles indicate that the poloidal velocity is the dominant term in the calculation of E_r and H-mode poloidal velocity profiles indicate strong E_r shear just inside the last closed flux surface.

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Rachael McDermott
PSFC, MIT

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