

Abstract Submitted  
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**Closing the Poloidal Flow Loop in the High-Field Side Scrape-off Layer of Alcator C-Mod**<sup>1</sup> NOAH SMICK, BRIAN LABOMBARD, MIT PSFC — Observations of near-sonic parallel flows towards the high-field side (HFS) divertor have suggested a ballooning-like transport drive on the low-field side. However, the mechanisms that close the implied particle flow loop have not been identified experimentally. To investigate this phenomenon, a magnetically-actuated scanning probe was operated on the HFS midplane during C-Mod's '07-'09 campaigns. This probe is capable of measuring the total flow vector in the SOL, including radial fluctuation-induced fluxes. ExB drift measurements confirm that the net poloidal flow is indeed directed towards the HFS divertor. Two mechanisms for closing the particle loop have been identified as important contributors. Measurements of the fluctuation-induced particle fluxes on the HFS show an inward pinch velocity of  $\sim 10$  m/s at or just inside the separatrix, sufficient to balance the midplane poloidal particle flux. Neutral penetration from inner divertor recycling has been quantified using a 1-D kinetic code, indicating that it can also account for a significant fraction of the total poloidal flux.

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