Abstract Submitted
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Low-Z Impurity Transport Analysis by Transient Gas Puff Experiments[1] STUART HENDERSON, MARTIN O'MULLANE, HUGH SUMMERS, University of Strathclyde, Department of Physics, Glasgow, G4 0NG, UK, LUCA GARZOTTI, HENDRIK MEYER, ASH PATEL, MARTIN VALOVIC, EURATOM/CCFE Fusion Association, Culham Science Centre, Abingdon, Oxon, OX14 3DB, UK, MAST TEAM — It is important to consider the possibility of core impurity accumulations in future tokamak reactors. Experiments have been performed that focus on injections of methane and helium into MAST beam heated, L- and H-mode discharges at a range of plasma currents. Results from a model integrating the transport equation for impurities (with diffusion coefficient, D, and convective velocity, V) and density measurements derived from the active charge exchange signal are presented. Through each scenario scan, there is a region of interest focussed around normalized minor radius (r/a) of 0.6. At this radial point, the L- to H-mode scan at constant current causes a change in sign of the impurity density peaking factor (V/D) from negative (inward velocity pinch) to positive (outward velocity pinch) respectively for both carbon and helium. As each scenario feels an inward edge pinch, there is a resulting accumulation of impurities near the plasma edge in H-mode. This sign change in V/D is also observed for carbon during the L-mode current scan. However this is less evident for helium where V/D remains negative in both scenarios. The features around this region are currently being investigated using the GS2 gyrokinetic code.

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