Abstract Submitted
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Collisionality dependence of impurity transport in Alcator C-Mod H-modes[1] M.A. CHILENSKI, M. GREENWALD, N.T. HOWARD, MIT Plasma Science and Fusion Center, M.L. REINKE, University of York, J. RICE, A.E. WHITE, MIT Plasma Science and Fusion Center, Y. MARZOUK, MIT Department of Aeronautics and Astronautics — Understanding and actuating impurity transport is of particular interest for future machines because of the concern that core accumulation of heavy impurities will lead to radiative collapse and higher disruptivity. This problem is expected to be especially pronounced at low collisionality, where a strong peaking of the electron density profile has previously been observed (Greenwald et al. 2007, *Nucl. Fusion* **47**, L26). To investigate this issue several experiments have been performed in Alcator C-Mod to measure the behavior of mid-Z (Ar, Ca) and high-Z (Mo, W) impurities in H-mode plasmas of varying collisionality ($2 < \nu_{eff} < 40$). These plasmas are of particular interest to this problem because they are entirely RF heated and lack core particle sources. Impurities are injected using laser blow-off or gas injection and the evolution of the impurity density profile is constrained with an X-ray imaging crystal spectrometer. These diagnostics combined with analysis using STRAHL allows detailed study of the transport. Furthermore, analysis of the background n_e, T_e profiles is conducted using advanced techniques including Gaussian process regression. An outline of this analysis scheme will be presented and recent results obtained from its application will be shown.

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