

Abstract Submitted
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Investigation of Impurity Transport in Alcator C-Mod Using Laser Blow-Off Impurity Injection¹ M.A. CHILENSKI, M. GREENWALD, N.T. HOWARD, MIT PSFC, L. DELGADO-APARICIO, PPPL, I. FAUST, M.L. REINKE, A.E. WHITE, MIT PSFC — Alcator C-Mod is equipped with a multi-pulse laser blow-off impurity injector, capable of injecting a small amount of a given impurity into the plasma as frequently as once every 0.1s. This system is used as an actuator for studies of impurity transport, where calcium is often used as it is non-intrinsic and non-recycling. To observe the effect of the injection, a high-resolution x-ray imaging crystal spectrometer captures temporally-resolved profiles of the emission from helium-like calcium. These emission profiles can then be analyzed to obtain temporally-resolved profiles of the impurity diffusivity and convective pinch velocity. Injections have been performed in a variety of plasmas including L-modes, H-modes, I-modes and plasmas with high fractions of lower hybrid current drive. C-Mod's combination of an impurity injector with a high-resolution x-ray spectrometer provides a powerful system for probing the behavior of impurity transport in these various regimes.

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