Abstract Submitted
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A Statistical Analysis of Momentum Transport Scaling in Alcator C-Mod Plasmas with No Momentum Input[1] YURI PODPALY, MIT PSFC, CHARLES BOCCHINO, University of Maine / MIT PSFC, JOHN RICE, ALEXANDER INCE-CUSHMAN, MIT PSFC — It has been observed that in L- to EDA H-mode transitions with no momentum input and in L-mode plasmas with auxiliary ICRF hearing in Alcator C-Mod tokamak plasmas there exists an anomalous momentum transport. A one dimensional, source free, momentum transport equation at the central chord of the plasma, ignoring convection and treating boundary conditions as a step function, was used to model the core velocity obtained by a high resolution x-ray spectrometer. It was found that the momentum diffusivity varied between $D_{\phi,H} \sim 0.1$ m^2/s and $D_{\phi,L} \sim 0.3$ m^2/s which corresponded to a characteristic momentum confinement time ($\tau_{\phi,L} \sim 0.02$ s, $\tau_{\phi,H} \sim 0.08$ s). In order to find a plasma scaling law τ_ϕ was compared to plasma parameters initially focusing on H-factor, energy confinement time, density, and current. Initial results suggest a positive correlation between H-factor and momentum confinement time.

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