

Abstract Submitted
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Performance evaluation of MSE on Alcator C-Mod¹ S. SCOTT, PPPL, R. MUMGAARD, R. GRANETZ, R. SHUGAYEV, M. CHUNG, MIT-PSFC — Performance of the Motional Stark Effect (MSE) diagnostic has been compared to first-principle numerical simulations by moving the Stark-split beam spectrum past MSE's narrow bandpass filters. The relative position of the Stark spectrum to the filters was varied by ramping the toroidal field at fixed q ; changing the filter temperature; and swapping one filter for another. We compare the signal strength and polarization fraction of beam emission to simulations that model the MSE emission using a modified version of the PERF code (NC Hawkes et al., Rev. Sci. Instrum. **70**, 894 (1999)). The simulation includes models for beam attenuation, beam excitation, Stark emission, aperture broadening, the measured filter response function, and background visible Bremsstrahlung emission. This work confirms analytic comparisons of the expected MSE signal strength between C-Mod and other tokamaks which suggest that the polarized signal intensity on C-Mod is unexpectedly low by a factor of several. Measurements of the beam performance using calorimeters, beam-target neutron production during deuterium beam injection, and IR measurements of a stainless steel target heated by the beam will be discussed.

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