

Abstract Submitted
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Inter-shot calibration of the MSE diagnostic on Alcator C-Mod

ROBERT MUMGAARD, MIT PSFC, STEVEN SCOTT, PPPL — Extensive efforts to eliminate thermal stress-induced birefringence within in-vessel lenses have reduced but not eliminated spurious drift in the calibration of the MSE diagnostic on Alcator C-Mod. In previous campaigns, the diagnostic utilized a quiescent Ohmic portion of each plasma discharge to calibrate it against magnetic equilibrium reconstructions (EFIT). This method introduces additional sources of error and places constraints on discharges for which MSE q-profile measurements can be obtained. Therefore, a system has been designed and installed to calibrate the diagnostic before and after each discharge. Light with four known linear polarizations is sequentially and reproducibly input into the diagnostic objective lens using wire-grid polarizers and a fiber-optic-based illumination system. The system also allows for experiments to identify the cause of the spurious drift to be conducted independent of plasma, fields or vacuum. The accuracy and reproducibility of the calibration system will be presented, along with results of experiments to identify the cause of the spurious drift. Supported by USDoE awards DE-FC02-99ER54512 and DE-AC02-09CH11466.

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