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Status and recent MSE results on Alcator C-Mod[1] STEVEN SCOTT, PPPL, ROBERT MUMGAARD, ROBERT GRANETZ, ROMAN SHUGAYEV, PSFC — Thermal birefringence within in-vessel lenses has been identified as the cause of a spurious drift in the calibration of the MSE diagnostic on Alcator C-Mod. Significant upgrades have been implemented to reduce thermal gradients in the in-vessel components including a gold-plated radiative heat shield and a unique lens mount to thermally isolate the MSE periscope. Experimental results on the effectiveness of these upgrades are presented. An automated calibration system has been designed and constructed to enable a thorough invessel calibration of MSE during brief up-to-air periods. This system was utilized during the Spring 2010 maintenance period to perform multiple parameter scans, including 2D scans of optical loss across the objective lens and 3D scans (2D position and angle-of-incidence) across the PEMs. Based on these measurements, the optical loss due to vignetting in the MSE optics is estimated at 20%. An overview of the current MSE system performance, opportunities for improvements and MSE q-profile measurements from recent current drive experiments are presented.

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Robert Mumgaard
PSFC

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