

Abstract Submitted
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Internal Magnetic Field Measurements using the New Three Chord Polarimeter on C-Mod¹ P. XU, MIT PSFC, W.F. BERGERSON, D.L. BROWER, W.X. DING, UCLA, J.H. IRBY, E.S. MARMAR, MIT PSFC — A single-chord poloidally viewing FIR polarimetry diagnostic was successfully operated on C-Mod during the FY10 C-Mod campaign. Observation of significant changes in the measured Faraday rotation during lower hybrid current drive (LHCD) experiments and during sawtooth crashes confirms that the C-Mod polarimetry measurement is sensitive to plasma current profile changes. Reduction of vibration induced noise during toroidal field ramp up and ramp down, and the calibration of the wire mesh beamsplitters, was necessary to ensure reliable rotation measurements. Tests employing changes in $|B_T|$ and plasma current direction were performed to ensure no contamination from the toroidal magnetic field. The measured signal agrees well with a synthetic Faraday rotation signal derived from EFIT. Optical design and layout of the new three-chord polarimeter will be discussed. High-sensitivity planar-diode Schottky detectors provide fast time response and low system noise. Observation of plasma current profile changes during LHCD experiments using the multichord system will be presented, as well as upgrade plans for up to 10 chords .

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