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Title:Far-infrared polarimetry diagnostic for measurement of internal magnetic field dynamics and fluctuations in the C-MOD Tokamak (invited)
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Abstract:A laser-based (2.55 THz) mulitchord polarimeter is now operational on Alcator C-Mod and is used to make measurements of the internal magnetic field structure as well as plasma fluctuations. The polarimeter is designed to measure the Faraday effect for high-field (up to 8.3 T) and high-density (up to 5×10^{20} m^{-3}) ITER relevant plasma conditions. Initial 3 chord tests are consistent with magnetic equilibrium reconstructions and indicate no measurable contamination from the toroidal magnetic field due to the Cotton-Mouton effect or misalignment. Time response of ＜1 μs enables the measurement of fast equilibrium temporal dynamics as well as high-frequency fluctuations.
Number of references:9
Inspec controlled terms:Faraday effect - magnetic field measurement - measurement by laser beam - plasma diagnostics - plasma fluctuations - polarimetry - Tokamak devices
Uncontrolled terms:FIR polarimetry diagnostic - internal magnetic field dynamicd - internal magnetic field fluctuations - C-MOD Tokamak - laser based multichord polarimeter - Alcator C-Mod - internal magnetic field structure - plasma fluctuation - Faraday effect - ITER relevant plasma condition - magnetic equilibrium reconstruction - toroidal magnetic field - Cotton-Mouton effect - Ding,1
Inspec classification codes:A5270K Optical (ultraviolet, visible, infrared) plasma diagnostic techniques - A4262E Metrological applications of lasers - A0760F Optical polarimetry and ellipsometry - A5255G Plasma in torus (stellarator, tokamak, etc.) - A5225G Plasma fluctuation phenomena
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