Abstract Submitted
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Inference of Ion-Temperature and Rotation-Velocity Profiles from a Spatially Resolving X-Ray Crystal Spectrometer on Alcator C-Mod[1] K.W. HILL, M. BITTER, PPPL, P. BEIERSDORFER, LLNL, A. INCE-CUSHMAN, MIT, MING-FENG GU, LLNL, S.G. LEE, NFRC, Korea Basic Science Inst., M. REINKE, J.E. RICE, MIT, S.D. SCOTT, PPPL — A new x-ray crystal spectrometer capable of providing spatially ($\sim$1.5 cm) and temporally ($\sim$10 ms) resolved, high resolution spectra of He-like Ar Kα lines has been installed on Alcator C-Mod. The imaging spectrometer consists of a spherically bent crystal and three Pilatus II 2d pixel detectors. Spectra are simultaneously measured from 12 – 45 chords covering the region r/a = 0 - 0.8 with count rates of 0.1 – 5.0 MHz per chord, enabling measurement with good statistics. Preliminary ion-temperature (T_i) and rotation-velocity (v_ϕ) profiles are inferred from the Doppler widths and shifts of the chordally integrated spectral lines. The data analysis techniques, T_i and v_ϕ profile results, analysis of background resulting from fusion neutrons, and predictions of performance on ITER and other tokamaks will be presented.

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