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Fast electron temperature, MHD and transport measurements on NSTX using a multi-energy SXR array L.F. DELGADO-APARICIO[1], D. STUTMAN, K. TRITZ, M. FINKENTHAL, The Johns Hopkins University, R. BELL, J. HOSEA, S. KAYE, B. LEBLANC, Princeton Plasma Physics Laboratory, S. SABBAGH, Columbia University — A compact multi-energy soft X-ray array has been developed for fast ($\leq$0.1 ms) time and space-resolved electron temperature, MHD and transport measurements on the National Spherical Torus Experiment (NSTX). The electron temperature is obtained by modeling the slope of the continuum radiation from ratios of the Abel inverted radial emissivity profiles in three energy ranges [1]. The applicability of this diagnostic technique to radio frequency electron heating and current drive experiments, perturbative electron and impurity transport studies, as well as an analysis of the impact of several types of MHD activity such as NTMs, RWMs, ELMs and Fishbones will be discussed. This work supported by U.S. DoE Contract No. DE-AC02-76CH03073 DoE and grant No. DE-FG02-99ER5452 at The Johns Hopkins University.
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