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Multi-energy SXR imaging for magnetically confined fusion studies[1]

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Multi-energy soft X-ray imaging is being developed for fast (< 1 ms) time and space-resolved measurements of the SXR emissivity profiles in multiple broadband energy ranges. The capabilities of this diagnostic technique for radio frequency heating experiments, fast electron temperature measurements, perturbative momentum, electron and impurity transport studies will be discussed, and examples of the impact on the ME-SXR profiles from several types of MHD activity such as NTMs, RWMs, ELMs and Fishbones will be presented. These results indicate that the ME-SXR technique has very good potential for non-magnetic control of fusion plasmas. This work was supported by U.S. DoE Contract No. DE-AC02-76CH03073 and DoE grant No. DE-FG02-99ER5452 at The Johns Hopkins University.

[1]In collaboration with D. Stutman, K. Tritz and M. Finkenthal