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Multi-energy SXR characterization of actively stabilized resistive wall modes in NSTX LUIS F. DELGADO-APARICIO, KEVIN TRITTZ, DAN STUTMAN, MICHAEL FINKENTHAL, The Johns Hopkins University, JEFFREY LEVESQUE, STEVE SABBAGH, Columbia University, RONALD BELL, BENOIT LEBLANC, STEPHEN PAUL, Princeton Plasma Physics Laboratory — A fast and compact multi-energy soft X-ray (ME-SXR) array is used for the determination of time and space-resolved SXR emissivity in different energy ranges during active stabilization of resistive wall modes (RWM) in NSTX. The insensitivity of ME-SXR to stray fields helps to discriminate between the RWM and parasitic perturbations. Fast electron temperature measurements are obtained from ratios of these emissivity profiles by modeling the slope of the continuum radiation. The amplitude of the core and edge electron temperature (T_e) modulations associated with actively-stabilized resistive RWMs is of the order of 50-100 eV ($\sim 10\%$). Their time history is in good agreement with the slow evolution of the $n = 1$ magnetic perturbation measured by the poloidal and radial RWM coils. Together with the magnetics, the ME-SXR data suggests that in NSTX the mode is not entirely 'rigid' and that acting with the stabilizing coils on its external structure may transfer some of the perturbation to the interior of the plasma.

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