

## Study of Type I ELM Systematics Using Soft X-ray Analysis on NSTX\*

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NSTX plasmas exhibit a range of ELM behavior during H-mode discharges, including relatively large discrete phenomena classified as ‘Type I’ ELMs. These ELMs can cause a reduction in the plasma stored energy of up to 15% and can perturb the electron temperature profile by triggering a cold pulse that propagates radially inward on timescales of hundreds of microseconds. However, different operating regimes can exhibit smaller ‘Type I’ ELMs which have a much smaller effect on the stored energy and electron temperature profile. The soft X-ray system on NSTX has the capability to examine the fast temperature perturbations and measure the propagation of these events via a ‘multi-color’ technique which uses various X-ray filters to measure the incident X-ray spectrum with different energy cut-off thresholds. This technique is used to study the variety of ‘Type I’ ELM behavior and relate the differences to NSTX plasma conditions.

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