Abstract Submitted for the DPP07 Meeting of The American Physical Society

Structure and evolution of ELMs in the edge and SOL of NSTX¹ R.J. MAQUEDA, Nova Photonics, R. MAINGI, C.E. BUSH, ORNL, K. TRITZ, Johns Hopkins Univ., J.-W. AHN, J.A. BOEDO, UCSD, S. KUBOTA, UCLA, E. FREDRICKSON, S.J. ZWEBEN, PPPL, NSTX TEAM — Edge Localized Modes (ELMs) are routinely seen during H-mode operation in NSTX. These ELMs have been characterized as large-sized Type I, medium-sized Type III, and small Type V ELMs. Recently, an experiment was dedicated to characterize the structure and evolution of these 3 ELM Types in NSTX utilizing multiple diagnostics. These diagnostics include: fast-framing digital cameras, soft X-ray arrays, edge probes (both tile-embedded and reciprocating), reflectometers and Mirnov arrays. In general, the ELM evolves from a perturbation of the edge topology that quickly develops ($<30 \mu s$) into strong filamentation that propagates both radially and poloidally/toroidally in the SOL. This ELM filamentation is then followed by an increased level of edge turbulence (and blobs) resembling, momentarily, that observed during L-mode phases. This later blob filamentation is clearly distinct from the initial ELM structures. The characteristics and differences observed in all 3 ELM Types will be presented.

 $^1\mathrm{Work}$ supported by DoE grants DE-FG02-04ER54520, DE-AC02-76CH03073, and DE-AC05-00OR22725.

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Date submitted: 21 Jul 2007 Electronic form version 1.4