

Abstract Submitted  
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**Inter-ELM and ELM-free divertor heat flux broadening induced by EHO in NSTX.**<sup>1</sup> KAIFU GAN, UTK, JOON-WOOK AHN, ORNL, RAJESH MAINGI, PPPL, TRAVIS GRAY, ORNL, STEWART ZWEBEN, ERIC FREDRICKSON, PPPL, GUSTAVO CANAL, GA, BRIAN WIRTH, UTK — Recent study on multi-machine database of inter-ELM divertor heat flux indicates that the midplane Scrape-off Layer power fall-off length for ITER is expected to be very narrow<sup>1</sup>,  $\sim 1\text{mm}$ , which will induce small plasma-wetted area ( $A_{\text{wet}}$ ) and high peak heat flux ( $q_{\text{peak}}$ ). In NSTX, edge harmonic oscillation (EHO) was observed during certain inter-ELM and ELM-free periods of H-mode operation. The EHO is observed to significantly increase  $A_{\text{wet}}$ , by up to a factor of 3, and decrease  $q_{\text{peak}}$  accordingly. The  $A_{\text{wet}}$  increases with the amplitude of EHO. Multiple peaks appeared in the heat flux profile in the presence of EHO. An EHO-induced filament around separatrix rotating in the counter-current direction was also observed by gas puff imaging diagnostic. The increase of  $A_{\text{wet}}$  is suspected to be caused by the rotating current filaments; the toroidally rotating filaments could have changed the edge magnetic topology and broadened heat flux profile by strike points splitting. Experimental observation of the temporal evolution of multiple peaks in heat flux profile shows consistent trend with the toroidal rotation of EHO. <sup>1</sup>T. Eich et al., Nucl. Fusion **53** (2013) 093031

<sup>1</sup>Inter-ELM and ELM-free divertor heat flux broadening induced by EHO in NSTX

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