Abstract Submitted
for the DPP20 Meeting of
The American Physical Society

ELM-free divertor peak heat flux reduction induced by small ELMs in NSTX. KAIFU GAN, University of Tennessee, Knoxville, RAJESH MAINGI, Princeton Plasma Physics Laboratory, TRAVIS GRAY, Oak Ridge National Laboratory, BRIAN WIRTH, University of Tennessee, Knoxville — It is well known that the edge localized modes (ELMs) will increase the divertor peak heat flux. However, the ELM-free divertor peak heat flux has been observed to decrease with small ELMs under high neutral beam injection (NBI) power (>3.5 MW) in NSTX. These small ELMs are observed in certain discharges, resulting in <50% transient increase in deposited power on divertor. At small ELMs peak, the integral power decay width (λ_{int}) increases by up to 200% relative to the ELM-free heat flux profile. The broaden heat flux footprint make the divertor peak heat flux at small ELMs peak is just 50% of the divertor peak heat flux at ELM-free. The λ_{int} at the inter-small ELMs is twice as large as the λ_{int} at the ELM-free. Some small ELMs was observed to decrease the divertor peak heat flux at inter small ELMs. In contract, small ELMs with low NBI power (<2 MW) and <50% transient increase in deposited power on divertor were also observed. These small ELMs do not increase the λ_{int} and the ELM-free divertor peak heat flux increases with these small ELMs.
This work was supported by the U.S. DOE, contract number DE-SC0008309.

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Date submitted: 07 Jul 2020 Electronic form version 1.4