Abstract Submitted for the DPP17 Meeting of The American Physical Society

Edge simulations in ELMy H-mode discharges of EAST tokamak<sup>1</sup> T.Y. XIA, Y.Q. HUANG, ASIPP, X.Q. XU, LLNL, Y.B. WU, DHU, L. WANG, Z. ZHENG, J.B. LIU, Q. ZANG, Y.Y. LI, D. ZHAO, ASIPP — Simulations of ELM crash followed by a coherent mode, leading to transient divertor heat flux on EAST are achieved by the six-field two-fluid model in BOUT++. Three EAST ELMy Hmode discharges with different pedestal structure, geometry and plasma current Ip are studied. The ELM-driven crash of the profiles in pedestal is reproduced, and the footprints of ELM filaments on targets are comparable with the measurements from divertor probes. A coherent mode is also found in the edge region in all the simulations after the ELM crash. The frequency and poloidal wave number are in the range of the edge coherent mode (ECM) on EAST. The magnetic fluctuations of the mode are smaller than the electric field fluctuations. The detailed comparisons between simulated mode structures with measurements will be reported. Statistical analysis on the simulated turbulent fluctuations shows that both the turbulent and blobby electron anomalous transport can pump the pedestal energy out into SOL, and then flow to divertors. The similar trend of the heat flux width with Ip is obtained in the simulations. The effects of the SOL current driven by LHW on ELMs will be discussed in this paper.

<sup>1</sup>This work was performed under the auspices of the US DOE by LLNL under contract DE-AC52-07NA27344. It was supported by the China NSF 11405215 and 11675217.

T.Y. Xia ASIPP

Date submitted: 13 Jul 2017

Electronic form version 1.4