

Abstract Submitted  
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**Comparison study between the observed ELM dynamics in the KSTAR H-mode and simulation results from BOUT++<sup>1</sup>** MINWOO KIM, POSTECH, Pohang, Korea, XUEQIAO XU, Lawrence Livermore National Laboratory, GUNSU S. YUN, JAEHYUN LEE, HYEON K. PARK, POSTECH, Pohang, Korea — The BOUT++ simulations [1] of edge localized modes (ELMs) have been quantitatively compared with high resolution 2D images of ELMs observed in typical KSTAR H-mode plasmas through an electron cyclotron emission imaging (ECEI) system [2]. The poloidal structure of the most unstable mode predicted by the linear 3-field simulation qualitatively matches with the observed ELM structure. As the next step, simulation studies for the nonlinear aspects of the ELM dynamics are planned; in particular, the transient mode structure change prior to the ELM crash [2] will be investigated. In addition, the parametric dependence of the observed ELM suppression/mitigation process during resonant magnetic perturbation (RMP) [2, 3] and supersonic molecular beam injection (SMBI) experiments will be studied using 5-field BOUT++ simulation.

[1] X.Q. Xu et al., PRL, **105** (2010).

[2] G.S. Yun et al., Phys. Plasmas, **19** (2012).

[3] Y.M. Jeon et al., accepted for publication in PRL.

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