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Evidence of perpendicular flow bifurcation at the onset of ELM-crash suppression[1] JAEHYUN LEE, Ulsan National Institute of Science and Technology, YOUNGMU JEON, YONGKYOON IN, National Fusion Research Institute, GUNSU YUN, Pohang University of Sciencen and Technology, MINWOO KIM, Ulsan National Institute of Science and Technology, MINJUN CHOI, GUNYOUNG PARK, National Fusion Research Institute, HYEON K. PARK, Ulsan National Institute of Science and Technology, KSTAR TEAM — The evidence of perpendicular electron flow ($v_{\perp,e}$) bifurcation at the onset of ELM-crash suppression has been measured using electron cyclotron emission imaging (ECEI) system [1] for the first time in KSTAR. The ECEI has shown that (1) resonant magnetic perturbation (RMP) enhances small scale turbulent fluctuations in the edge toward the ELM-crash suppression phase, (2) the induced turbulence regulates growth of the ELM filament via nonlinear interaction between them [2]. Cross spectra and correlation analysis among the ECEI channels revealed that the ELM crashes get suppressed along with a rapid reduction of $v_{\perp,e}$ close to zero (small but finite value) together with decrease of its shear. The $v_{\perp,e}$ $\sim$0 km/s is sustained during the ELM-crash suppression even under a large variation of RMP current and external torque and when this condition is violated, ELM crashes are reappeared. [1] G.S. Yun et al., Rev. Sci. Instrum., 81 (2010) 10D930 [2] J. Lee et al., Phys. Rev. Lett., 117 (2016) 075001

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