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Resolving the uncertainties of non-axisymmetric fields in tokamaks YONGKYOON IN, J. SEOL, W.H. KO, S.G. LEE, S.W. YOON, H.H. LEE, Y.M. JEON, J. KIM, J.G. BAK, H. PARK, Natl Fusion Res Inst, J.K. PARK, Princeton Plasma Physics Laboratory, Princeton, U.S.A., G.S. YUN, POSTECH, Pohang, Korea, 3D PHYSICS TASK FORCE TEAM — Recent study suggests that KSTAR could be a benefactor of the extremely low level of intrinsic error field in n=1 resonant magnetic perturbation (RMP) driven edge localized modes (ELM) control [1]. Specifically, when the n =1 RMP currents increases in order to suppress/mitigate ELMs, a kink-resonant mode-locking is not usually invoked in KSTAR, unlike in other devices [2]. Besides we have discovered that the mid-plane RMP appeared much more effective than the off-midplane RMPs in affecting the ELMs with strong density pump-outs and enhanced ELM frequency. Presently, the enhanced understanding of non-axisymmetric field in tokamaks has been in great need, in particular, for the ITER RMP requirements [3]. As the prevailing design of in-vessel RMP coils in ITER is similar to that in KSTAR, we are keen to resolve the uncertainties of the non-axisymmetric fields on transport and stability, and their limits, contributing directly to ITER and beyond.

[1] Y. In *et al*, NF (2015)
[2] Y.M. Jeon *et al*, PRL(2012)
[3] A. Loarte *et al*, NF (2014)

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