

Abstract Submitted
for the DPP14 Meeting of
The American Physical Society

Recent experimental results and future plan in KSTAR JONG-GU KWAK, SANG-GON LEE, YOUNG-SUN BAE, BOUNG-HO PARK, JIN-YOUNG KIM, National Fusion Research Institute, KSTAR TEAM — In this talk, the recent results of KSTAR will be presented focusing on extension of operational boundary in long-pulse discharges and highlights in experimental physics. H-mode discharges has been sustained longer and the operational regime of plasma parameters has been significantly extended in terms of heating power and plasma current. The long-pulse operation is in accordance with ITER requirement, i.e., in ITER similar shape, low safety factor ($q_{95} \sim 3$) and normalized beta (~ 2.0) with real-time control of density and power. Both ELM suppression and mitigation are discovered in wide range of RMP coil configuration and the suppression window in the edge safety factor has extended from 6.5 to 3.9 indicating the strong impact of resonant component. Beside RMP ELM suppression, it is also investigated the effect of other techniques on ELMs, such as edge heating by ECH and cooling by SMBI. Detailed evaluation of error field (EF) has been performed by 4 segment compass scan by the internal coils and the measured level of intrinsic error field is an order of magnitude lower than other tokamaks. In addition to the above topics, it is summarized the recent results on rotation & transport physics, newly installed diagnostics, MHD and fast ion activities, followed by the near future plan.

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Date submitted: 11 Jul 2014

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