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Scenario development toward high beta steady-state operation at KSTAR S. W. YOON, Y. M. JEON, H. S. KIM, M. H. WOO, S. H. HAHN, Y. S. BAE, J. S. KANG, National Fusion Research Institute, Y. S. NA, Seoul National University, Y. K. OH, H. K. PARK[1], National Fusion Research Institute, KSTAR TEAM — Solving issues for high-beta long-pulse operation is one of the essential topics for superconducting tokamaks and sustainment of a fully non-inductive H-mode discharge with high performance is successfully demonstrated upto record-long ~70 seconds at KSTAR. Typical plasma parameters are 0.4MA(I_p), max 5MW (NBI+ECH), β_p~3, f_{BS}~0.5, H_{98}~1.3 and in a wide range of q_{95} =6~12. Though an internal transport barrier is not identified yet, the developed scenario has many features in common with the so called high β_p discharge at DIII-D. The thermal confinement is sensitive on the deposition layer of the central ECH heating ~1MW and it correlates with MHD activities in the range of TAE frequency (100~200kHz) suggesting strong interaction TAE with fast ion transport. Based on the transport/stability analysis on the present discharge, improved performance is also estimated with higher NBI+ECH heating power envisaged in near future.

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