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**KSTAR Overview** SI-WOO YOON, J. G. KWAK, W. C. KIM, W. H. KO, H. S. HAHN, H. H. LEE, B. H. PARK, National Fusion Research Institute, Y. IN, Ulsan National Institute of Science and Technology, Y. S. NA, Seoul National University, KSTAR TEAM — The recent progress of the KSTAR tokamak is summarized. First of all, new advanced scenarios were developed targeting steady-state operation with the fine tuning of diverting and heating and significant progress in shape control capability. The stationary internal transport barrier is successfully reproduced with comparable confinement as H-mode level both in limited and USN configuration and a low $q_{min}$ scenario is developed based on early diverting and delayed core heating scheme. Recent 3D experiments have focused on several ITER-relevant issues, such as divertor heat flux broadening in resonant magnetic perturbations on ELM-crash suppression, RMP-driven ELM-crash-suppression on ITER-like low $q_{95}$ (~3.2-3.4) and the characterization of ELM-crash suppression window in terms of normalized electron collisionality and plasma toroidal rotation at pedestal top. Cross-validation between the advanced diagnostics and the modeling provides new insight on the basic transport process, i.e., non-diffusive avalanche-like electron heat transport events are observed by the ECEI and these observations have been successfully reproduced by gyrokinetic simulations indicating the broad range of spatial scales up to the minor radius. Finally, performance of symmetric multiple Shattered Pellet Injections (SPIs) is demonstrated that peak density was increased twice with dual SPIs compared with a single SPI and energy can be radiated effectively when multiple SPIs are injected simultaneously, as planned in ITER.

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