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L- to H-mode power threshold and confinement characteristics of H-modes in KSTAR HYUN-SEOK KIM, Seoul National University, YOUNG-MU JEON, National Fusion Research Institute, JOON-WOOK AHN, Oak Ridge National Laboratory, SI WOO YOON, LAURENT TERZOLO, National Fusion Research Institute, KI MIN KIM, Princeton Plasma Physics Laboratory, YONG-SU NA, Seoul National University, KSTAR TEAM — The KSTAR project has achieved H-mode with about 0.9~1.4 MW of NBI heating and about 0.25 MW of ECRH in the 3rd and 4th campaigns of KSTAR experiments. In this work, the L- to H-mode threshold power(P_{TH}), the energy confinement time(τ_E) and the confinement enhancement factor(H) were calculated in KSTAR. Firstly, in the procedure to calculate the power loss to the separatrix, the ohmic heating power, the fast ion loss power and the radiation loss power were simulated using a 1.5-D integrated plasma transport code, ASTRA and a Monte-Carlo code for NBI simulation, NUBEAM. With respect to P_{TH} , a trend of discrepancy between the P_{TH} of KSTAR and that of multi-machine empirical scaling was observed in the regime of relatively low plasma density. Secondly, in order to evaluate confinement of KSTAR H-modes, a H_{exp} was introduced defined as the ratio of total energy confinement time between the L-mode phase and the H-mode phase and compared with conventional H factors such as H_{89-p} .

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