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Status of the ITER plasma modeling activities in JAEA JUNYA SHIRAISHI, MITSURU HONDA, NOBUHIKO HAYASHI, NOBUYUKI AIBA, MITSUNORI TOMA, AKINOBU MATSUYAMA, OSAMU NAITO, YOSHIAKI MIYATA, SHIZUO INOUE, EMI NARITA, KATSUHIRO SHIMIZU, KIYOTAKA HAMAMATSU, SHUNSUKE IDE, MASATOSHI YAGI, Japan Atomic Energy Agency — JAEA has been contributing to the ITER plasma modeling in a wide range of research areas. Among them we report recent integrated modeling activities in JAEA. The integrated modeling is indispensable for predictive simulations of autonomous ITER plasmas, which exhibit multi-physics nature. JAEA has been developing an integrated modeling code, the TOPICS suite. The TOPICS suite has been incorporating many physics factors to enhance its prediction capability and has delivered many important findings on ITER plasm. A recent achievement is the success of predictive simulation of toroidal rotation in ITER [1]. The TOPICS suite has been coupled with the 3D equilibrium code VMEC and the 3D drift-kinetic solver FORTEC-3D to compute the NTV, the radial electric field, and the resultant toroidal rotation self-consistently. Another achievement is the quantitative estimate of reduction of ELM energy loss by pellet injection in ITER [2]. The TOPICS suite has been coupled with a new pellet model and with the MHD stability code MARG2D to calculate finite-n modes for modeling the ELM-enhanced diffusivities.

[1] M. Honda et al., Nucl. Fusion 55, 073033 (2015).
[2] N. Hayashi et al., Contrib. Plasma Phys. 54, 599 (2014).

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