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Modeling on toroidal angular momentum transport with turbulent Reynolds stress in tokamak plasmas WONJAE LEE, Seoul National University, KI MIN KIM, Center for Advance Research in Fusion Reactor Engineering, HYUNSEOK KIM, YONG-SU NA, Seoul National University — Turbulent momentum transport is regarded as an important issue since it could account for the intrinsic toroidal rotation and the inward propagation of momentum in tokamaks. The effects of off-diagonal flux of toroidal angular momentum in tokamak plasmas are investigated by 1.5D core transport simulation using ASTRA. The plasma current and angular momentum transport equations are calculated with evolutions of the density and temperature profiles obtained from experiments. A simple momentum transport model [1] is implemented to take into account shear suppressed momentum diffusion, turbulent pinch, and residual stress terms. The theory based model considering turbulent pinch and residual stress shows better agreements with the measured toroidal velocity profile than the model only considering diffusion term, from which the effects of turbulent Reynolds stress are discussed.

[1] O. D. Gurcan et al., Phys. Plasmas, 17, 032509 (2010)

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