Abstract Submitted
for the DPP09 Meeting of
The American Physical Society

Transport analysis in toroidal helical plasmas using the integrated code: TASK3D[1] A. WAKASA, A. FUKUYAMA, S. MURAKAMI, Kyoto University, C.D. BEIDLER, H. MAASSBERG, Max-Planck-Institute fur Plasmaphysik, M. YOKOYAMA, M. SATO, National Institute for Fusion Science — The integrated simulation code in helical plasmas, TASK3D, is being developed on the basis of an integrated modeling code for tokamak plasma, TASK. In helical systems, the neoclassical transport is one of the important issues in addition to the anomalous transport, because of strong temperature dependence of heat conductivity and an important role in determining the radial electric field. We have already constructed the neoclassical transport database in LHD, DGN/LHD. The mono-energetic diffusion coefficients are evaluated based on the Monte Carlo method by DCOM code and the mono-energetic diffusion coefficients database is constructed using a neural network technique. Also we apply GSRAKE code, which solves the ripple-averaged drift kinetic equation, to obtain transport coefficients in highly collisionless regime. We have newly incorporated the DGN/LHD module into TASK3D. We will present several results of transport simulation in typical LHD plasmas.

[1]This work is supported by Grant-in-Aid for Scientific Research (S) (20226017) from JSPS.

Atsushi Fukuyama
Kyoto University

Date submitted: 24 Jul 2009 Electronic form version 1.4