

Integrated transport simulation of LHD plasma by TASK3D

TASK3D による LHD プラズマの統合輸送シミュレーション

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An integrated transport simulation code for the helical plasma, TASK3D, is developed and applied to the LHD plasma. The heat and particle transport equations are solved and compared with LHD experimental results. The neoclassical transport is evaluated by the LHD/DGN neoclassical transport database and the turbulent transport model is applied to the heat transport analysis. Relatively good agreements are obtained between the experimental and simulated profiles of the density and temperature in the LHD. The high- T_i mode plasma is simulated and we found that the reduction of turbulence transport is most significant contribution to achieve the high ion temperature and the reduction of the turbulent transport from the L-mode plasma (normal hydrogen plasma) is evaluated to be a factor about five by using integrated heat transport simulation code.