Abstract Submitted
for the DPP08 Meeting of
The American Physical Society

Self-consistent analysis of ICRF heating and current drive in tokamak plasmas[1] HIDEO NUGA, ATSUSHI FUKUYAMA, Kyoto University — Plasma heating and current drive by RF waves deform the momentumd istribution function of the heated species. The deviation of the distribution functions from Maxwellian affects the propagation and absorption of the wave itself. Therefore self-consistent analysis including the modification of the momentum distribution function is required for quantitative analysis. In this presentation, results of self-consistent analysis of ICRF heating and current drive in tokamak plasmas using the integrated tokamak modeling code TASK are reported. The full wave component TASK/WM calculates the wave electric field. The bounce-averaged Fokker-Planck component TASK/FP analyzes the time evolution of the distribution functions for electrons and ions. The dielectric tensor component TASK/DP calculates the plasma dielectric tensor. By repeating the calculation of these components, we can describe the time evolution of the wave heating and current drive. We have confirmed that the modification of momentum distribution function from Maxwellian affects the deposition to ions and electrons. Parameter dependence of the deposition profile will be reported.

[1]This work was supported by KAKENHI (20226017).

Atsushi Fukuyama
Kyoto University

Date submitted: 17 Jul 2008 Electronic form version 1.4