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Simulation study of toroidal flow generation by ICRF heating using GNET code[1] S. MURAKAMI, Dpt. Nuclear Eng., Kyoto Univ., K. ITOH, NIFS, L.J. ZHENG, J.W. VAN DAM, IFS, UT at Austin, A. FUKUYAMA, Dpt. Nuclear Eng., Kyoto Univ. — The toroidal flow generation by the ICRF heating is investigated in the tokamak plasma applying GNET code, in which the drift kinetic equation is solved in 5D phase-space. We assume a tokamak plasma similar to the Alcator C-mod plasma as a first step. We obtain a steady state distribution of energetic minority ions and the flux surface averaged toroidal flow is evaluated. It is found that a co-directional toroidal flow is generated outside of the RF wave power absorption region. The dominant part of toroidal flow does not depend on the sign of $k_{\|}$. When we change the sign of the toroidal current we obtain a reversal of the toroidal flow velocity, which is consistent with the experimental observations. We consider the toroidal precession motion of energetic tail ions accelerated by the ICRF heating. The magnetic shear and the poloidal magnetic drift increases a net toroidal drift motion during one bounce of banana motion. We estimate the toroidal flow by these toroidal precession motion and the results are compared with the simulation ones.

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