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Modeling of suprathermal electron radial flux and toroidal torque by ECH in non-axisymmetric toroidal plasmas[1] SADAYOSHI MURAKAMI, YASUHIRO YAMAMOTO, Kyoto University — A drastic change of the toroidal velocity profile has been observed when we applied the ECH to the NBI heated plasma. We assume that the radial flux of supra-thermal electron would play an essential role in causing a toroidal flow by the JxB torque, We have evaluated the toroidal torque by ECH applying the GNET code and have found significant net toroidal torques by ECH due to the radial flux of supra-thermal electrons in LHD. In this study, We, first, estimate the radial flux of suprathermal electrons assuming a drift convection model and estimate the radial profile of the JxB toroidal torque by ECH in a rippled tokamak. We find that the maximum toroidal torque which is proportional to $\delta^{3/2}/n$, where δ and n are the ripple amplitude and plasma density, respectively. We find that the obtained model fluxes show relatively good agreements with the numerical results by GNET code. Also, we extend this drift convection model in the case of LHD and HSX. We find that the larger JxB toroidal torques are obtained in helical plasmas than that in the rippled tokamak due to the large fraction of trapped electrons. The drift convection model results are compared with the numerical results by GNET code.

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