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2D full wave analysis of EC wave structure in tokamak plasmas using FEM[1] YUICHIRO MARUYAMA, ATSUSHI FUKUYAMA, Department of Nuclear Engineering, Kyoto University — Electron cyclotron (EC) wave propagation has been mostly analyzed by the ray tracing technique. For spherical tokamaks with high density, however, full wave analysis is necessary owing to the existence of evanescent layers and mode conversion to the Bernstein waves. Full wave analysis requires a lot of computational resources and finite element method (FEM) is expected to be suitable for parallel computing since it requires less computational resources compared with full or partial spectral method. We have already developed 3D full wave code using FEM, TASK/WF. In order to obtain better spatial resolution for the analysis of EC wave in tokamak plasmas, we have developed a 2D version with mixed base functions. The kinetic response of plasmas will be implemented as an integral representation of the dielectric tensor. Preliminary numerical results in small size tokamaks will be presented.

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