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Development of FullWave : Hot Plasma RF Simulation Tool¹ VLADIMIR SVIDZINSKI, JIN-SOO KIM, J. ANDREW SPENCER, LIANGJI ZHAO, SERGEI GALKIN, FAR-TECH, Inc. — Full wave simulation tool, modeling RF fields in hot inhomogeneous magnetized plasma, is being developed. The wave equations with linearized hot plasma dielectric response are solved in configuration space on adaptive cloud of computational points. The nonlocal hot plasma dielectric response is formulated in configuration space without limiting approximations by calculating the plasma conductivity kernel based on the solution of the linearized Vlasov equation in inhomogeneous magnetic field. This approach allows for better resolution of plasma resonances, antenna structures and complex boundaries. The formulation of *FullWave* and preliminary results will be presented: construction of the finite differences for approximation of derivatives on adaptive cloud of computational points; model and results of nonlocal conductivity kernel calculation in tokamak geometry; results of 2-D full wave simulations in the cold plasma model in tokamak geometry using the formulated approach; results of self-consistent calculations of hot plasma dielectric response and RF fields in 1-D mirror magnetic field; preliminary results of self-consistent simulations of 2-D RF fields in tokamak using the calculated hot plasma conductivity kernel; development of iterative solver for wave equations.

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