Development of full wave code for modeling RF fields in hot non-uniform plasmas[1] LIANGJI ZHAO, VLADIMIR SVIDZINSKI, ANDREW SPENCER, JIN-SOO KIM, FAR-TECH, Inc. — FAR-TECH, Inc. is developing a full wave RF modeling code to model RF fields in fusion devices and in general plasma applications. As an important component of the code, an adaptive meshless technique is introduced to solve the wave equations, which allows resolving plasma resonances efficiently and adapting to the complexity of antenna geometry and device boundary. The computational points are generated using either a point elimination method or a force balancing method based on the monitor function, which is calculated by solving the cold plasma dispersion equation locally. Another part of the code is the conductivity kernel calculation, used for modeling the nonlocal hot plasma dielectric response. The conductivity kernel is calculated on a coarse grid of test points and then interpolated linearly onto the computational points. All the components of the code are parallelized using MPI and OpenMP libraries to optimize the execution speed and memory. The algorithm and the results of our numerical approach to solving 2-D wave equations in a tokamak geometry will be presented.

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