

Abstract Submitted  
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**Recent developments of the *FullWave* code for RF modeling in hot tokamak plasmas**<sup>1</sup> LIANGJI ZHAO, VLADIMIR SVIDZINSKI, JIN-SOO KIM, Far-Tech, Inc. (United States) — The *FullWave* code is being developed for solving linear wave equations with high resolution in frequency domain in configuration space for Tokamak plasma. *FullWave* finds solution of wave boundary value problem iteratively through hybrid iteration cycles that combine time evolution of the electromagnetic fields and iterative relaxation of the solution. This iteration scheme allows for a much higher resolution of the solution than by using direct solvers. *FullWave* with cold plasma model has been extensively tested for modeling RF beams propagation in 2D in tokamak plasmas in ECR frequency range demonstrating a very high resolution. The development of the code with nonlocal hot plasma dielectric response is underway. This response is formulated by calculating the plasma conductivity kernel based on an accurate numerical solution of the linearized Vlasov equation in inhomogeneous magnetic field. The code is optimized for memory use by interpolating the conductivity kernel from a coarse grid of test points to the fine grid of simulation points at every time and relaxation step. Recent progress of development of the *FullWave* code, including the details of plasma conductivity kernel calculation, will be presented.

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