

Abstract Submitted
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Modeling RF Fields in Hot Plasmas with Parallel Full Wave Code¹ ANDREW SPENCER, VLADIMIR SVIDZINSKI, LIANGJI ZHAO, SERGEI GALKIN, JIN-SOO KIM, FAR-TECH, Inc. — FAR-TECH, Inc. is developing a suite of full wave RF plasma codes. It is based on a meshless formulation in configuration space with adapted cloud of computational points (CCP) capability and using the hot plasma conductivity kernel to model the nonlocal plasma dielectric response. The conductivity kernel is calculated by numerically integrating the linearized Vlasov equation along unperturbed particle trajectories. Work has been done on the following calculations: 1) the conductivity kernel in hot plasmas, 2) a monitor function based on analytic solutions of the cold-plasma dispersion relation, 3) an adaptive CCP based on the monitor function, 4) stencils to approximate the wave equations on the CCP, 5) the solution to the full wave equations in the cold-plasma model in tokamak geometry for ECRH and ICRH range of frequencies, and 6) the solution to the wave equations using the calculated hot plasma conductivity kernel. We will present results on using a meshless formulation on adaptive CCP to solve the wave equations and on implementing the non-local hot plasma dielectric response to the wave equations. The presentation will include numerical results of wave propagation and absorption in the cold and hot tokamak plasma RF models, using DIII-D geometry and plasma parameters.

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