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Initial Simulations of RF Waves in Hot Plasmas Using the Full-Wave Code[1] LIANGJI ZHAO, VLADIMIR SVIDZINSKI, ANDREW SPENCER, JIN-SOO KIM, FAR-TECH, Inc. — FullWave is a simulation tool that models RF fields in hot inhomogeneous magnetized plasmas. 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 by calculating the plasma conductivity kernel based on the solution of the linearized Vlasov equation in inhomogeneous magnetic field. In an rf field, the hot plasma dielectric response is limited to the distance of a few particles' Larmor radii, near the magnetic field line passing through the test point. The localization of the hot plasma dielectric response results in a sparse matrix of the problem thus significantly reduces the size of the problem and makes the simulations faster. We will present the initial results of modeling of rf waves using the Fullwave code, including calculation of nonlocal conductivity kernel in 2D Tokamak geometry; the interpolation of conductivity kernel from test points to adaptive cloud of computational points; and the results of self-consistent simulations of 2D rf fields using calculated hot plasma conductivity kernel in a tokamak plasma with reduced parameters.

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