

Abstract Submitted  
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**Progress on the development of *FullWave*, a Hot and Cold Plasma Parallel Full Wave Code**<sup>1</sup> J. ANDREW SPENCER, VLADIMIR SVIDZINSKI, LIANGJI ZHAO, JIN-SOO KIM, FAR-TECH, Inc. — *FullWave* is being developed at FAR-TECH, Inc. to simulate RF waves in hot inhomogeneous magnetized plasmas without making small orbit approximations<sup>2</sup>. *FullWave* is based on a meshless formulation in configuration space on non-uniform clouds of computational points (CCP) adapted to better resolve plasma resonances, antenna structures and complex boundaries. The linear frequency domain wave equation is formulated using two approaches: for cold plasmas the local cold plasma dielectric tensor is used (resolving resonances by particle collisions), while for hot plasmas the conductivity kernel is calculated. The details of *FullWave* and some preliminary results will be presented, including: 1) a monitor function based on analytic solutions of the cold-plasma dispersion relation; 2) an adaptive CCP based on the monitor function; 3) construction of the finite differences for approximation of derivatives on adaptive CCP; 4) results of 2-D full wave simulations in the cold plasma model in tokamak geometry using the formulated approach for ECRH, ICRH and Lower Hybrid range of frequencies.

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<sup>2</sup>V. A. Svidzinski et al., Phys. Plasmas 23, 112101 (2016); L. Zhao et al. (this meeting)

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