

Abstract Submitted
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Application of a GPU-Assisted Maxwell Code to Electromagnetic Wave Propagation in ITER¹ S. KUBOTA, W.A. PEEBLES, UCLA, D. WOODBURY, BYU, I. JOHNSON, A. ZOLFAGHARI, PPPL — The Low Field Side Reflectometer (LSFR) on ITER is envisioned to provide capabilities for electron density profile and fluctuations measurements in both the plasma core and edge. The current design for the Equatorial Port Plug 11 (EPP11) employs seven monostatic antennas for use with both fixed-frequency and swept-frequency systems. The present work examines the characteristics of this layout using the 3-D version of the GPU-Assisted Maxwell Code (GAMC-3D). Previous studies in this area were performed with either 2-D full wave codes or 3-D ray- and beam-tracing. GAMC-3D is based on the FDTD method and can be run with either a fixed-frequency or modulated (e.g. FMCW) source, and with either a stationary or moving target (e.g. Doppler backscattering). The code is designed to run on a single NVIDIA Tesla GPU accelerator, and utilizes a technique based on the moving window method to overcome the size limitation of the onboard memory. Effects such as beam drift, linear mode conversion, and diffraction/scattering will be examined. Comparisons will be made with beam-tracing calculations using the complex eikonal method.

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