

Abstract Submitted
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3-D microwave simulation in fusion plasmas¹ THOMAS WILLIAMS, RODDY VANN, York Plasma Institute, University of York, UK, MARTIN O'BRIEN, EURATOM/CCFE Fusion Association, UK, ALF KOEHN, IGVP, Universitaet Stuttgart, Germany — The propagation of EM radiation past wavelength-sized 3D inhomogeneities is not well understood, yet is of importance for both microwave heating and diagnostic applications in tokamaks. To improve this understanding, a new cold-plasma code has been written to extend full-wave simulations of propagation and mode conversion in magnetized plasmas to 3D. Studies of propagation past density filaments (“blobs”) are presented and compared with 2D simulations. This work supports MAST experiments using the SAMI diagnostic to image microwave emission from the plasma edge due to mode conversion from electron Bernstein waves. Significant fluctuations in the SAMI data mean that detailed modelling is required to improve its interpretation, since analytic and experimental work suggests that electron density fluctuations and magnetic shear can affect the mode conversion efficiency.

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