

Abstract Submitted  
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**Full-Wave Modelling and Integrated Transmission Line Testing for the ITER Low-Field Side Reflectometer**<sup>1</sup> JAMES ROBINSON, Virginia Commonwealth University, CHRISTOPHER MUSCATELLO, JAMES ANDERSON, ANTHONY GATTUSO, General Atomics, GEORGE NEILSON, GERRIT KRAMER, ALI ZOLFAGHARI, Princeton Plasma Physics Laboratory, VIRGINIA COMMONWEALTH UNIVERSITY TEAM, GENERAL ATOMICS TEAM, PRINCETON PLASMA PHYSICS LABORATORY TEAM — The low-field side reflectometer (LFSR) will provide important measurements of the electron density for ITER. The full-wave reflectometer code has been used to simulate microwave propagation of LFSR frequencies (30 – 165 GHz) in an ITER plasma. The objective of the simulations was to study how plasma turbulence and errors in the magnetic field and electron temperature contribute to signal loss and to errors in the inferred density. In addition, a mockup transmission line provides a facility for system- and component-level testing of the diagnostic. The test facility was recently upgraded with an antenna array, vacuum window assembly, and waveguide periscope similar to the actual design. Test of these components focused on investigating their effect on the reflectometer signal in terms of mode conversion and insertion loss.

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