

Abstract Submitted
for the DPP16 Meeting of
The American Physical Society

Validation of conducting wall models using magnetic measurements¹

J.M. HANSON, J. BIALEK, F. TURCO, G.A. NAVRATIL, Columbia University, J. KING, E.J. STRAIT, A.D. TURNBULL, General Atomics — Comparisons between magnetic measurements of the DIII D wall eddy current response to applied ac, non-axisymmetric fields and MHD stability code predictions favor a fully 3D treatment of the conducting elements in the system. We describe validation studies of the wall models in the MARS-F and VALEN stability codes, using coilsensor vacuum coupling measurements. The measurements are sensitive to induced wall currents, owing to the close proximities of the sensors and coils to the wall. VALEN treats conducting structures with arbitrary 3D geometries, while MARS-F uses an axisymmetric wall model and spectral decomposition of the problem geometry. Straightforward improvements to the VALEN model, such as refining the wall mesh and sensor geometry, lead to good agreement with single-channel measurements. Comparisons of couplings to multi-coil toroidal mode perturbations to both codes favor the 3D simulation approach, likely because it naturally treats sidebands generated by the coils and wall currents.

¹Work supported by the US Department of Energy under DE-FG02-04ER54761, DE-FC02-04ER54698, and DE-FG02-95ER54309.

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Date submitted: 14 Jul 2016

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