IMPROVED IMPEDANCE MATRIX COMPRESSION (IMC) TECHNIQUE FOR EFFICIENT WAVELET-BASED METHOD OF MOMENTS SOLUTION OF SCATTERING PROBLEMS

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ABSTRACT: *The iterative impedance matrix compression (IMC) method iteratively constructs and solves a reduced version of the method of moments (MoM) impedance matrix based on analysis of the error in fulfilling the original matrix equation. Hence, it is possible that some of the selected basis functions, while dominant in the analyzed error, will have very little weight in the solution itself. Here, we propose a backward elimination step, which is aimed at discarding these superfluous basis functions. To demonstrate this idea, we use the scattering problem of a TM_z plane wave by a conducting cylinder of square cross-section. The resultant compression ratio is in good agreement with the theoretical limit of the compression ratio obtained a posteriori, based on the exact MoM solution.* © 2004 Wiley Periodicals, Inc. Microwave Opt Technol Lett 40: 275–280, 2004; Published online in Wiley InterScience (www.interscience.wiley.com). DOI 10.1002/mop.11351