Abstracts

Numerical cost of gradient computation within the method of moments and its reduction by means of a novel boundary-layer concept

S. Amari. "Numerical cost of gradient computation within the method of moments and its reduction by means of a novel boundary-layer concept." 2001 MTT-S International Microwave Symposium Digest 01.3 (2001 Vol. III [MWSYM]): 1945-1948 vol.3.

A rigorous investigation of the numerical cost of sensitivity analysis (gradient computation) of complex structures within moment method is presented. It is shown that, when the number of variables N used in the analysis is large, a common situation in complex structures, the ratio r of the number of flops required to evaluate the sensitivity of the response to structural changes to the number of flops required to determine the response at a single point is such that r=0(1/N) as long as the number of flops required to fill the matrix is not dominant. For the latter important case, a new boundary layer concept is introduced to reduce the CPU time for the gradient computation. A simple example of an iris in a rectangular waveguide is used to illustrate the concept and show its validity.

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