Abstracts

A stable and efficient admittance method for the analysis of complex waveguide circuits

L. Tarricone, G. Zarba, L. Accatino, S. Cambi and M. Mongiardo. "A stable and efficient admittance method for the analysis of complex waveguide circuits." 1999 MTT-S International Microwave Symposium Digest 99.1 (1999 Vol. I [MWSYM]): 381-384 vol.1.

The generalised admittance method is a rigorous approach for the analysis of waveguide circuits. Unfortunately, it presents the risk of ill-conditioning, especially when very complex structures are analyzed with a considerably high number of modes. In this paper, the concept of adjacence graph is proposed to solve this problem. By applying the latter strategy, the linear system representing the core of the analysis is partitioned into many independent anti well-conditioned subsystems, thus improving the numerical stability of the approach, and its efficiency. Results are given referred to a real industrial case, a complex E/H-plane filter, whose analysis could not be performed via a standard admittance method when a very high number of modes were considered. With the present approach, the ill-conditioning is avoided, and a speed-up of about 12 times is achieved.

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